Interested Party Testimony on Senate Bill 246 (SAFE Act)
Senate Finance Committee
March 13, 2017

Amy Bush Stevens
Health Policy Institute of Ohio
www.hpio.net

What's the problem?

Suspensions and expulsions are common among young children. During the 2016-2017 school year, the Ohio Department of Education recorded 34,000 suspensions and expulsions among students in kindergarten through third grade. Rates of suspensions and expulsions are considerably higher among students who are black, male, economically disadvantaged or have disabilities.

This indicates that many schools are struggling with behavior problems among young children and need more tools to prevent these problems from escalating to the point where they lead to poor academic and health outcomes.

Why is this important?

Early childhood is a critical window of brain development. Early brain growth is the foundation for later development. If a child experiences harmful events during these critical years, brain development can be compromised, leading to problems with aggressive behavior, impulsivity, ability to stay on task and other cognitive problems.

Suspensions and expulsions can reinforce and perpetuate behavioral problems instead of resolving them. Children who are suspended or expelled at young ages are more likely to be suspended or expelled in later years and to experience the following negative outcomes:

- Academic failure and grade retention
- Higher likelihood of dropping out of school
- Justice system involvement and incarceration

What works to reduce behavior problems in schools?

There are many policy opportunities to promote positive behavior in schools, which would reduce or eliminate the need for suspensions and expulsions. For example:

- **Improve school climate and social-emotional learning**, such as through schoolwide adoption of Positive Behavior Interventions and Supports (PBIS) and programs that help students develop self-control and empathy.
- **Expand availability of mental health services and supports for students and teachers through community partnerships.**
- **Ensure that teachers are adequately trained, supported and prepared to manage student behavioral challenges.**

Preparing schools to address the challenges of adverse childhood experiences (ACEs)

Adverse childhood experiences (ACEs) are stressful events, such as poverty, abuse or having a parent with substance abuse disorder or a parent who has died or been incarcerated. Exposure to ACEs in a child's early years can have long-term negative effects on brain development, including disruption of development of emotion regulation, social behavior, reasoning capacity, language skills and stress reactivity. As a result, **children who have experienced ACEs are more likely to have behavior problems in school.**

A recent report from Child Trends found that Ohio has one of the highest rates of children who have experienced three or more ACEs; 15 percent of Ohio children had experienced three or more ACEs, as reported by the 2016 National Survey of Children's Health, compared to 10 percent for the U.S. overall.[1]

Given the scope and impact of the opiate crisis in Ohio (including increases in child maltreatment, Neonatal Abstinence Syndrome and the number parents who are incarcerated or die from overdose), it is likely that the prevalence of ACEs in Ohio will increase. It is therefore critical that schools are prepared to support positive behavior for these children in ways that will lead to future academic success and mental and physical wellbeing.

Why is this relevant to health policy?

Reducing early childhood behavior problems, suspensions and expulsions would likely improve academic outcomes and reduce education disparities for Ohio children. Research indicates that people with higher educational attainment generally have better health outcomes. Therefore improving academic performance is critical for improving health outcomes.

Over the past year, the Health Policy Institute of Ohio has released a series of "*Connections between Education and Health* Policy" briefs and fact sheets, including the attached publications:

- "Suspensions and Expulsions among Young Children" (January 2018 fact sheet)
- "The Importance of Early Learning" (October 2017 policy brief)

References for data and research mentioned in this document are included in the attached fact sheet and policy brief.

All of the "Connections between Education and Health" policy briefs are available on HPIO's website (www.hpio.net). For additional information, contact: astevens@hpio.net

[1] The prevalence of adverse childhood experiences nationally, by state and by race/ethnicity. Child Trends. Updated February 20, 2018.

Health policy fact sheet

The connections between education and health

Suspensions and expulsions among young children

The **third policy brief** in HPIO's four-part education and health series describes the importance of a child's early years for both health and future educational attainment. Adverse environments and experiences during these early years have a critical impact on development and can affect behavior in an educational setting. Certain school disciplinary practices, such as out-of-school suspensions and expulsions, can hinder academic success and reinforce behavioral problems instead of resolving them.

The most severe disciplinary sanctions a school can impose, suspensions and expulsions, involve the removal of a child from school, either for a limited period of time or permanently.[1] It is not uncommon for young children to be suspended or expelled. In the 2016-17 academic year, the Ohio Department of Education (ODE) registered approximately 34,000 suspensions and expulsions among students in kindergarten through third grade, including 16,400 for disobedient or disruptive behavior.[2]

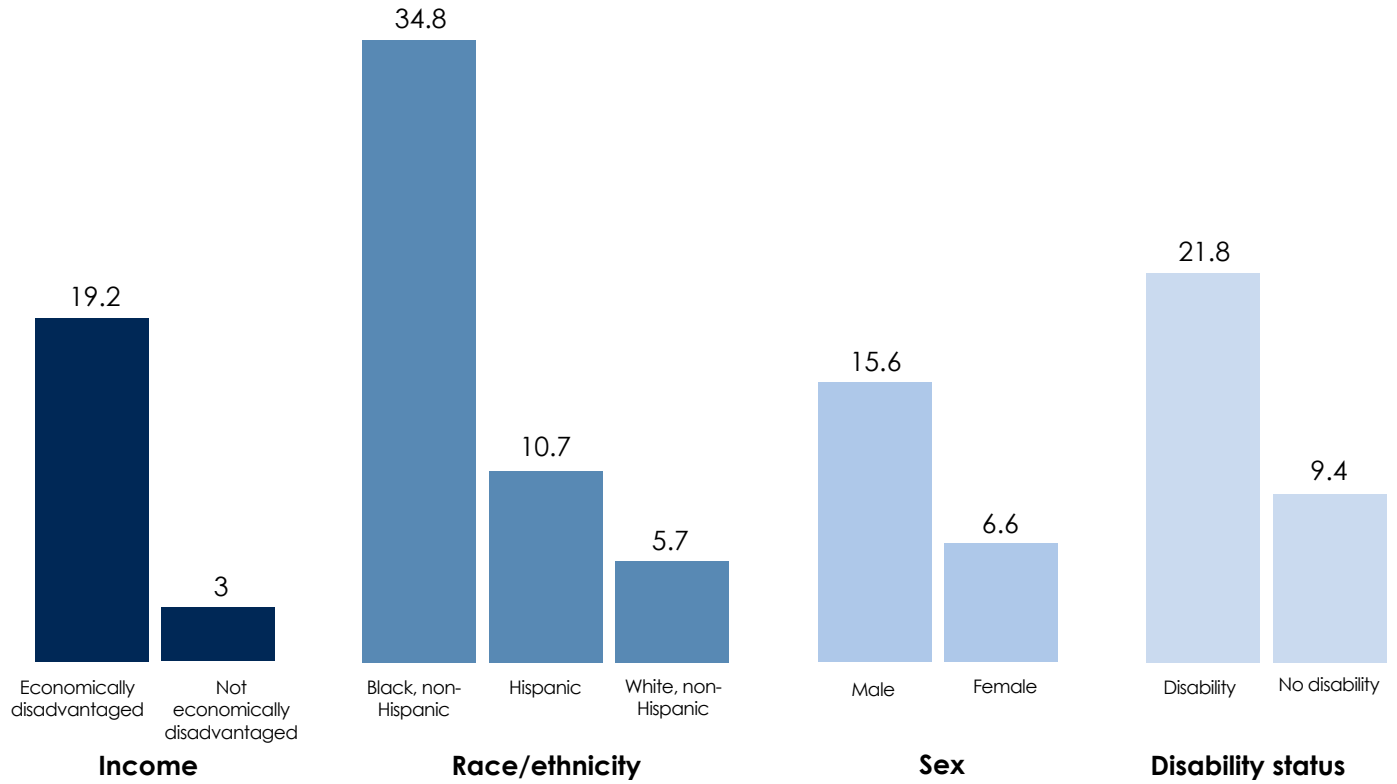
Researchers have found the rate of expulsions in U.S. state-funded pre-kindergarten (pre-K) systems to be more than three times the national expulsion rate of K-12 students. The highest expulsion rates are in for-profit child care centers and faith-based settings. Rates in school-based and Head Start locations are lower.[3]

Rates of suspensions and expulsions are higher among black, male and economically-disadvantaged students – both in early childhood and K-12 education. For example, during the 2016-2017 school year, a black student in Ohio was 6.1 times more likely to receive an out-of-school suspension than a white student, and an economically-disadvantaged student was 6.4 times more likely to be suspended than a more financially-stable student. Also, in the 2016-2017 year, students with a disability were more than twice as likely to be suspended than students without a disability[4] (see figure 1).

Negative outcomes associated with suspensions and expulsions

Suspensions and expulsions can reinforce and perpetuate behavioral problems instead of resolving them. Many behavioral problems stem from developmental challenges

Figure 1. **Out-of-school suspensions per 100 Ohio students (2016-2017)**



Note: Rates are calculated by dividing the total number of out-of-school suspensions received by students of a certain category in all grade levels by the total number of enrolled students in that category. This number is then multiplied by 100. This can include multiple suspensions for a single student.
Source: Ohio Department of Education interactive report card data (iLRC)

or exposure to trauma, such as oppositional defiance, hyperactive behavior and aggression. If these conditions are not addressed in early years, they may lead to behaviors in school and in later years that are resistant to treatment.[5] Children who are expelled from preschool are also often ill-prepared for kindergarten, starting their educational trajectories on a negative path very early on.[6]

Children who are suspended or expelled at a young age are also more likely to be suspended or expelled in later years.[7] Negative outcomes associated with suspension and expulsions include:

- Academic failure, grade retention and negative attitudes toward school
- Ten times greater likelihood of dropping out of high school
- Greater likelihood of justice system involvement and incarceration[8]

What can be done?

Reducing or eliminating suspensions and expulsions is most likely to succeed through comprehensive, evidence-based approaches. Efforts to create a positive school climate, such as through schoolwide adoption of Positive Behavior Interventions and Supports (PBIS) (discussed in a **separate HPIO fact sheet**), social-emotional learning and trauma-informed education, can prevent behavioral problems and eliminate the need for suspensions and expulsions. Expanding availability of mental health services through community partnerships is another valuable approach.

The Ohio Preschool Expulsion Prevention Partnership

Teachers with regular access to an early childhood mental health consultant or similar professional report significantly fewer preschool expulsions. The Ohio Preschool Expulsion Prevention Partnership, created by Nationwide Children's Hospital and the Ohio Department of Mental Health and Addiction Services, provides early childhood consultants at early learning sites. These consultants make recommendations for strategies, interventions and training and offer resources for students and families, including referrals to local mental health providers, if necessary.[9]

Ensuring that teachers are adequately trained, supported and prepared to manage student behavioral challenges is critical. Higher teacher stress levels are associated with higher expulsion rates.[10] The likelihood of expulsion has been found to significantly decrease when teachers have access to classroom-based behavioral consultation and support from mental health professionals[11] (see the Ohio Preschool Expulsion Prevention Partnership box). A focus on teacher health and wellness, lower student-teacher ratios and professional development aimed at promoting social-emotional and behavioral health of children and eliminating unconscious biases can also help decrease expulsion rates.[12]

Senate Bill 246: The SAFE (Supporting Alternatives for Fair Education) Act

Increasingly, states and cities are enacting policies to limit the use of out-of-school suspensions and expulsions, especially for young children. In December 2017, Ohio senators Peggy Lehner (R-Kettering) and Gayle Manning (R-North Ridgeville) introduced legislation to phase out out-of-school suspensions for Ohio students in pre-K through third grade for non-violent behavior, except in limited circumstances. Out-of-school suspensions would still be permitted for student actions posing a physical threat to teachers or other students, as required by federal law.

Several other provisions of the bill would require:

- Schools to report out-of-school suspension and expulsion data to ODE, based on the type of offense committed and broken out by race and disability status
- Boards of education to implement a system-wide PBIS framework and submit annual reports outlining progress
- Teacher preparation programs to include a semester-long course on positive classroom behavior management principles which covers PBIS and social-emotional development
- Schools to assist the disciplined student's parent or guardian with finding mental health services when a need is identified, whenever possible
- Schools to permit students to complete any classroom assignments missed during a suspension

Notes

1. Gilliam, Walter S. *Prekindergarteners left behind: Expulsion rates in state prekindergarten systems*. New York, NY: Foundation for Child Development, 2005. See also *Policy statement of expulsion and suspension policies in early childhood settings*. U.S. Department of Health and Human Services and U.S. Department of Education. https://www2.ed.gov/policy/gen/guid/school-discipline/policy-statement-ece-expulsions-suspensions.pdf
2. Data from the Ohio Department of Education interactive report card data. Accessed Jan. 2, 2018. http://bireports.education.ohio.gov
3. Gilliam, Walter S. *Prekindergarteners left behind: Expulsion rates in state prekindergarten systems*. New York, NY: Foundation for Child Development, 2005.
4. Data from the Ohio Department of Education interactive report card data. Accessed Jan. 2, 2018. http://bireports.education.ohio.gov
5. Ibid.
6. Campbell, Susan B., Daniel S. Shaw and Miles Gilliom. Early externalizing behavior problems; Toddlers and preschoolers at risk for later maladjustment. *Development and psychopathology*, 12, No. 3 (2000): 467-488.
7. Gilliam, Walter S. *Prekindergarteners left behind: Expulsion rates in state prekindergarten systems*. New York, NY: Foundation for Child Development, 2005.
8. *Policy statement of expulsion and suspension policies in early childhood settings*. U.S. Department of Health and Human Services and U.S. Department of Education. https://www2.ed.gov/policy/gen/guid/school-discipline/policy-statement-ece-expulsions-suspensions.pdf
9. Dusenbury, Linda and Roger P. Weissberg. *Social Emotional Learning in Elementary School: Preparation for Success*. Issue brief. Pennsylvania State University and the Robert Wood Johnson Foundation, 2017.
10. *Policy statement of expulsion and suspension policies in early childhood settings*. U.S. Department of Health and Human Services and U.S. Department of Education. https://www2.ed.gov/policy/gen/guid/school-discipline/policy-statement-ece-expulsions-suspensions.pdf
11. Dusenbury, Linda and Roger P. Weissberg. *Social Emotional Learning in Elementary School: Preparation for Success*. Issue brief. Pennsylvania State University and the Robert Wood Johnson Foundation, 2017.
12. Gilliam, Walter S. *Prekindergarteners left behind: Expulsion rates in state prekindergarten systems*. New York, NY: Foundation for Child Development, 2005.
13. Ohio Preschool Expulsion Prevention Partnership. Nationwide Children's. http://mha.ohio.gov/Portals/0/assets/Prevention/EarlyChildhood/NACH-2730-Preschool-Expulsion%20flier.pdf

hpio health policy institute of ohio

Health Policy Brief

Connections between education and health 3

The importance of early learning

Overview

In January 2017, HPIO released **Connections between Education and Health**, the first policy brief in a four-part series (see box below). It describes the two-way relationship between health and education; people with higher educational attainment generally have better health outcomes and healthier children are more likely to have academic success. This third brief illustrates the importance of a child's early years for both health and future educational attainment.

The first five years of a child's life are a time of both great opportunity and vulnerability. Early childhood lays the groundwork for physical, emotional, social and intellectual development later in life.[1] The human brain grows more quickly during infancy and early childhood than at any other time.[2] However, adverse environments and experiences during these early years can have a critical impact on development and subsequent functioning of the brain and biological systems, leading to lifelong threats to educational attainment and health.[3]

High-quality early care, education and family support programs, such as home visiting and preschool, can improve school readiness. They can also reduce, eliminate or counteract many harms and stressors for children, especially those children living in poverty or other difficult circumstances.[4] Some programs, such as home visiting, can also simultaneously benefit the child's parents. Investments in high-quality early care and education are also important to a number of key state policy goals, including kindergarten readiness, third grade reading proficiency, high school graduation rates, healthcare spending, criminal justice spending, workforce participation and earnings.

Despite the benefits of these programs, the proportion of Ohio children who are receiving home visiting services and/or are enrolled in early childhood education is fairly low. For example:

- At most, 4.7 percent of Ohio children under age 6 living below the Federal Poverty Level (FPL) received home visiting services from one of the state programs in state fiscal year (SFY) 2016.[5]
- Overall, only 45 percent of Ohio's 3 and 4 year-old children were enrolled in any public- or private-funded, formal early learning program in years 2013-2015. Of the 3 and 4 year-old children living at or below 200 FPL, 39 percent were enrolled.[6]

This brief discusses:

- How early childhood experiences influence health
- Evidence-based early learning and family support programs and polices including home visiting, high-quality early childhood education (e.g., child care, preschool, pre-kindergarten) and social-emotional learning
- The extent to which Ohio is implementing these initiatives
- Policy options to enhance early learning in Ohio

Additional HPIO education and health publications and resources

This is the third in a series of four policy briefs describing connections between health and education.

- **Policy brief No. 1** presents the relationship between education and health and describes factors impacting this relationship (Released January 2017).
- **Policy brief No. 2** explores the provision of health services in schools (Released July 2017).
- **Policy brief No. 4** will describe school-based prevention policies and programs that impact health and education outcomes, including strategies to improve nutrition, increase physical activity, prevent violence and drug abuse and increase health literacy (Target release date: early 2018).
- Additional resources can be found on HPIO's "Intersections between education and health" **online resource page**, which will be continuously updated throughout 2017.

Development in early childhood

Brain development

Ninety percent of a child's brain development occurs in the first five years of life,[7] and it is during the early years that basic brain architecture is formed.[8] The young child's brain grows at a phenomenal rate of approximately one million neural connections every second.[9] However, the brain also actively trims away connections that are not being reinforced during the toddler to early preschool years.[10]

Early brain growth is the foundation for later development. Relationships with nurturing, responsive caregivers in early childhood support healthy brain development.[11] Conversely, if a child experiences traumatic or harmful events during these critical years, the sturdiness of the structure can be compromised, even if a healthy environment is put in place later in life.[12]

Executive function development

Executive function is a part of brain development that involves working memory, mental flexibility and self-control.[13] Executive function skills enable children to focus, remember and apply rules, organize information and control frustration. Foundational to children's success in school, these skills strengthen reading, writing and mathematics capabilities.

Children with underdeveloped executive functioning are more likely to display aggressive behavior, be unable to stay on task and behave impulsively, which impact academic achievement and social interactions.[14]

Literacy, numeracy and physical development

In early childhood, children:

- Develop the skills and interests that foster language development and literacy.[15] Children who lack adequate pre-literacy foundations may struggle to learn to read.
- Learn counting, number recognition and order and pattern identification. The development of number sense and the application of mathematical reasoning positively impact mathematics achievement in school.[16]
- Grow physically, gaining both the gross and fine motor skills that are important to a child's success. For example, children who struggle with fine motor skills may have difficulty with the physical processes of writing.

Social-emotional development

Social-emotional development, sometimes called child mental health, includes the child's experience, expression and management of emotions and the ability to establish positive relationships with others.[17] These skills are key for success in school and throughout life. Healthy social-emotional development can lead to improved:

- Self-confidence
- Communication skills
- Intellectual curiosity
- Self-control
- Ability to empathize and relate to others[18]

Why is early childhood important to health?

Early childhood is a time of extensive development in the brain and many of the body's biological systems that are critical for health.[19] Learning and development during these early years can have a critical impact on future educational attainment, which is an important determinant of health, as described in HPIO's **Connections between Education and Health** brief. There are also other important aspects of early childhood that can influence health, school readiness and future educational attainment, including experiences, relationships and the environment in which a child grows up.

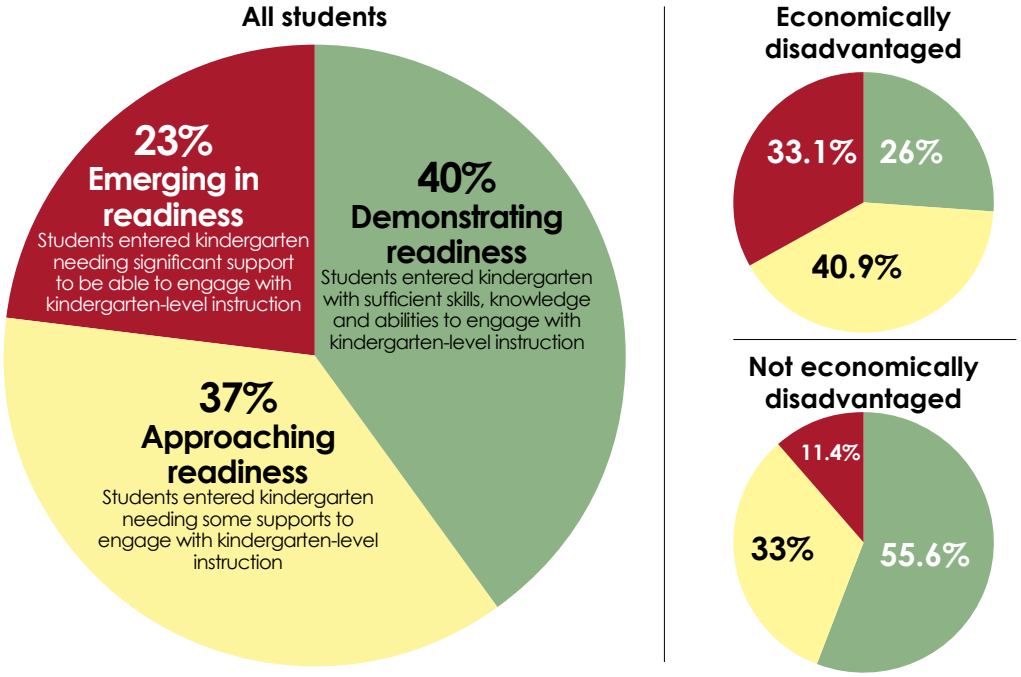
Poverty is often a considerable barrier to healthy development. In 2015, 47 percent of Ohio children ages 0-8 lived in families at or below 200 percent FPL.[20] Where poverty is concentrated, stress levels are likely to be higher, food insecurity more prevalent and academic achievement lower.

School readiness and educational attainment

Healthy development and skill building in early childhood are extremely important to ensure kindergarten readiness and future educational achievement. Children who come into kindergarten unprepared for the rigors of formal schooling are at a disadvantage for future success. Gaps in kindergarten readiness tend to persist through a child's education.[21] A child's readiness for kindergarten correlates with third grade reading proficiency, and third grade reading proficiency then correlates with high school graduation. One out of six children who are not reading proficiently by the end of third grade will fail to graduate from high school on time. The effects appear to be worse for people with low incomes. For example, 26 percent of children who have experienced poverty and are not proficient third grade readers do not graduate from high school, compared to 9 percent of poor readers who have not experienced poverty.[22]

Figure 1. **Ohio Kindergarten Readiness Assessment results (2015-2016)**

Ohio's Kindergarten Readiness Assessment (KRA) measures the school readiness of children starting kindergarten. The KRA is administered in the fall to kindergarteners in public schools. It assesses a child's readiness in Language and Literacy, Social Foundations, Mathematics, and Physical Well-Being and Motor Development. Figure 1 shows the results from the 2015-2016 school year.



Note: A student is considered to be economically disadvantaged if he/she meets any of the following conditions: eligible for free or reduced-price lunches or resides in a household in which someone is eligible; receives public assistance or has a guardian receiving public assistance; or meets the income guidelines for Title I and the parent or guardian has completed a Title I student income form.
Source: Ohio Department of Education. Kindergarten Readiness Assessment Annual Report 2015-2016

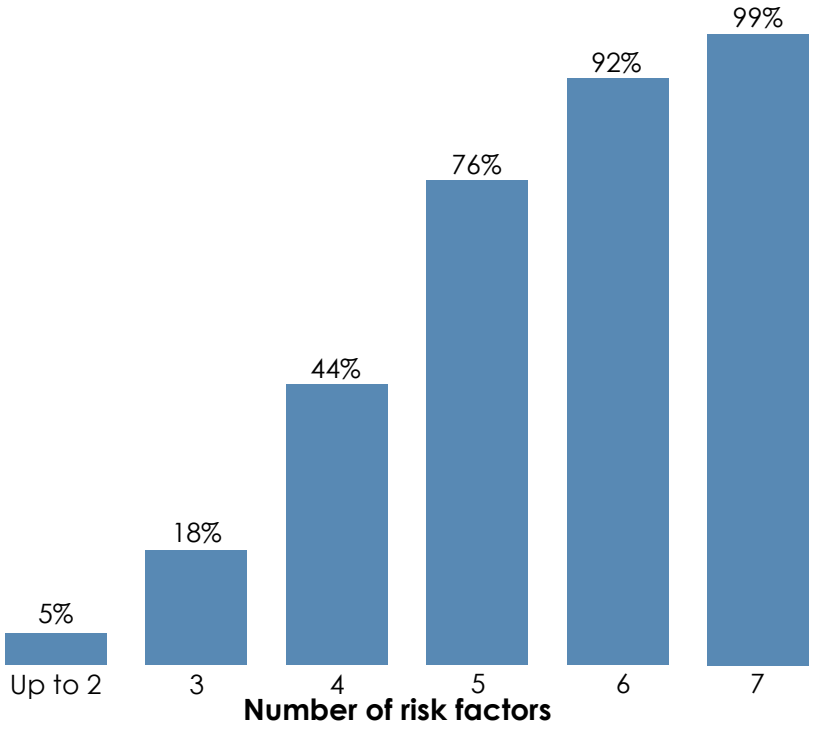
Stress and adverse childhood experiences

Healthy development can be severely affected by stressful experiences and/or excessive or ongoing stress, called trauma or toxic stress,[23] in a child's early years, creating lasting negative effects on health and achievement. Areas of brain development that tend to be disrupted by toxic stress are those tied to regulation of emotion and social behavior, reasoning capacity, language skills and stress reactivity.[24] Further, too much stress early in life can also impact development of biological systems such as the stress response system and the immune system. These development deficits can lead to a variety of adverse, lifelong effects on learning, behavior and physical and mental health.[25]

Short or long-term stressors, called adverse childhood experiences (ACEs), are stressful or traumatic events such as poverty, abuse, malnutrition, exposure to violence and parental incarceration. Children exposed to ACEs are at an increased risk for developmental delays and serious physical and mental health conditions later in life, including heart disease, cancer and addiction. The likelihood of these negative outcomes increases with exposure to additional ACEs. By age 5, one-third of children living in poverty will have experienced at least two ACEs.[26]

One study examined the effects of ACEs and additional risk factors such as minority status, poverty, living with a single caregiver and certain medical conditions. The study found that 99 percent of children who had experienced seven risk factors had a developmental delay by age 3, compared to only 5 percent of children who had only experienced one or two (see figure 2 on page 4).[27]

Figure 2. **Chance of developmental delay by age 3 by number of risk factors present, U.S. (2008)**



Source: Barth, Richard P. et. al. *Developmental Status and Early Intervention Service Needs of Maltreated Children.* Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, 2008. Analysis of data from the National Survey of Child and Adolescent Well-Being

Trauma-informed care and education in Ohio

The sooner that child trauma is recognized and appropriately addressed, the more likely that the ramifications will be reduced. In trauma-informed education, staff members recognize and implement responses to trauma so that children can learn to calm their anxieties and adjust their behaviors.[28]

As understanding of the impact of trauma grows, Ohio is increasing trauma-informed practices in education and other settings. For example:

- The Ohio Departments of Mental Health and Addiction Services and Developmental Disabilities are collaborating on a statewide **Trauma-Informed Care Initiative** to increase competence in trauma-informed care across various entities and agencies.
- Several thousand educators, first responders, justice system representatives and agency staff from across the state have taken part in trauma-informed training and are applying trauma-informed practices across child-serving entities.
- Ohio's attention to social-emotional learning and Positive Behavioral Interventions and Supports (PBIS) is providing a strong foundation for trauma-informed educational settings. See page 8 for more information on social-emotional learning and PBIS.

Parenting and early relationships

Consistent, responsive and nurturing relationships with adult caregivers are critical to healthy brain development and positive social-emotional development. These relationships are associated with better physical and mental health, fewer behavioral problems, higher educational achievement and a number of other long-term benefits for the child.[29] Such relationships can also buffer against the effects of trauma and negative experiences.

Parents and other caregivers who consistently engage positively with children – verbally and experientially – provide strong platforms for child development. For example, parents' verbal engagement with their child often outweighs the family's socio-economic status in predicting the child's language proficiency.[30] However, the stressors and adversities experienced by many parents and caregivers, especially those living in poverty, can considerably reduce the amount of time and resources available to their children. This lack of engagement can negatively affect executive function, energy and self-regulation capacities of children, as well as parents.[31] Therefore, the most effective child development strategies, such as home visiting, also involve a parental support component.

Other aspects of early childhood that influence health

There are various other experiences in early childhood that can influence health. For example:

- **Access to safe and healthy environments**: Exposure to certain environmental toxins in early childhood, such as lead, can pose a considerable threat to a child's immature biological systems and thus impact future health, learning and behavior.[32]
- **Nutrition**: Children who are undernourished in the womb and during early childhood can experience negative health impacts and influences on physical development. For example, undernourishment can weaken immunity throughout life.[33]

- **Health-promoting behaviors**: Learning and development of important health-promoting behaviors, such as tooth brushing, avoidance of risk-taking behaviors, and healthy eating and physical activity habits, tend to occur in early childhood.

Evidence-based early learning and family support programs and policies

In addition to preparing children to succeed in school, high-quality early care, education and home visiting programs can promote health and prevent disease. They can also reduce, eliminate or counteract many harms and stressors for children. These programs have demonstrated benefits among all children, but research shows the strongest benefits among children who are economically disadvantaged. The earlier these interventions are started in a child's life, the greater the benefit. Finally, these programs not only show individual benefits, but they also have significant societal benefits, such as reduced crime and welfare dependence.[34]

A strong body of research has found investments in high-quality early childhood programs to have a higher rate of return on investment than interventions implemented in later years (see figure 3). This is especially true when high-quality early childhood programs are followed by continued high-quality learning experiences.[35] However, the vast majority of current investment is aimed at children older than age 5.[36]

Home visiting

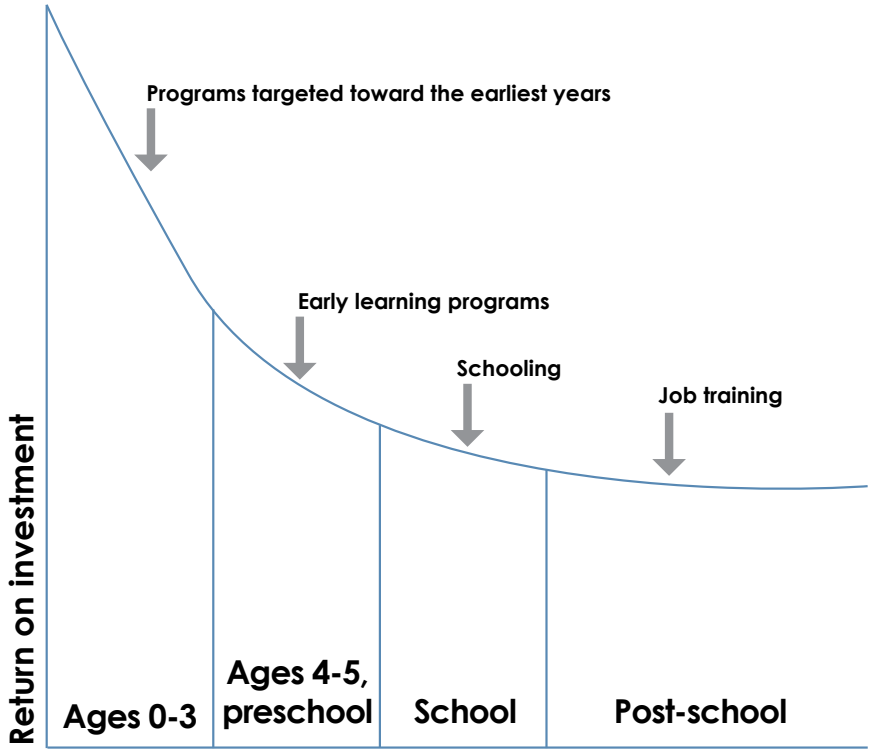
Home visiting programs are an example of a multi-generation strategy; they help children by also helping their parents. Trained providers visit expectant mothers and families with infants and young children, providing one-on-one support for healthy parent and child development, early education and family needs. Participation is typically voluntary.

Benefits of home visiting

Home visiting programs that are comprehensive and focused on high-need participants are more likely to have positive results.[37] Depending on the model, benefits may include:

- Improved child health, development and/or kindergarten readiness
- Reduced involvement with child protective services
- Enhanced parenting skills
- Improved family economic self-sufficiency

Figure 3. **Returns on investment at different ages**



Source: Heckman, James. "Schools, skills and synapses." *Economic Inquiry* 46, No. 3 (2008): 289-324.

- Decreased costs to healthcare, education, social services, criminal justice and other public systems[38]

Evaluations of home visiting programs have demonstrated economic returns of between $1.80 and $9.50 for each $1 invested.[39] Three evidence-based home visiting program models are described in the box below.

Home visiting in Ohio
Help Me Grow is a program administered by the Ohio Department of Health offering home visiting services in all 88 counties. Services are delivered by local community providers using only evidence-based models.

Help Me Grow mainly serves low-income (at or below 200 percent FPL), pregnant women and low-income, first-time mothers and their young children. Help Me Grow is funded by the state general revenue fund (GRF) and, in some communities, supplemented by local sources such as tax levies or private foundations. Funding from the federal Maternal, Infant, and Early Childhood Home Visiting (MIECHV) home visiting program allows Help Me Grow to reach more families. MIECHV funding can only be used on certain evidence-based models (see box).[40]

In SFY 2016, Help Me Grow and MIECHV funded a total of 114,617 home visits to 10,586 families. At most, 4.7 percent of children under age 6 living below 100 percent FPL received home visiting services from one of these programs in SFY 2016.[41]

Examples of local home visiting initiatives
SPARK (Supporting Partnerships to Assure Ready Kids) Ohio is a home visiting program focused on kindergarten readiness. It was started by the W.K. Kellogg Foundation and the Sisters of Charity Foundation Canton. Numerous foundations, community organizations and school districts throughout Ohio are now involved, as the program currently operates in 11 counties.[42] SPARK children who entered kindergarten in 2016 outperformed their peers on the Kindergarten Readiness Assessment, and SPARK parents were more likely to be engaged in their children's learning.[43] An independent evaluation team found that SPARK children outperform their peers on state assessments, at least through fifth grade.[44]

Since 1999, Every Child Succeeds has offered home visiting services to families in the Cincinnati area, utilizing funding from both private donors and public entities. As of June 30, 2014, they had served over 14,600 families since the program began, utilizing the Nurse Family Partnership and Healthy Families America models.[45] The program was founded by Cincinnati Children's Hospital Medical Center, Cincinnati-Hamilton County Community Action Agency and the United Way of Greater Cincinnati.

Early childhood education

Early childhood care and education encompasses educational and developmental programs for young children, including child

Three evidence-based home visiting program models that are funded and implemented in Ohio through the Help Me Grow program are described below. All three have been found to decrease health disparities.

The Nurse-Family Partnership* offers home visits by registered nurses for low-income, first-time mothers and their babies. Visits begin during pregnancy and continue until the child turns two. The program aims to improve prenatal, birth and early childhood outcomes. Demonstrated benefits of the model include:
- Improved well-being
- Improved family functioning
- Reduced risky health behaviors
- Reduced child maltreatment[46]

Healthy Families America* serves overburdened families at risk for adverse childhood experiences (ACEs). Beginning either prenatally or right after birth, a family support worker provides home visiting services for 3-5 years. Research identified improved parenting as a benefit.[47]

Parents as Teachers is an early childhood parent education and family support program beginning at or before birth. Services continue until kindergarten. Educators teach parents about early childhood development and effective parenting strategies. The program may also involve child developmental screenings and linkages to community resources. Benefits identified in research include:
- Improved cognitive skills
- Increased school readiness
- Improved child development[48]

*Funded by MIECHV

care, preschool and pre-kindergarten (pre-K). Infants and children of all ages can be served by child care, but preschool and pre-K serve mostly 3 and 4 year-old children. The terms preschool and pre-K are often used interchangeably. These programs tend to focus on ensuring children are prepared for kindergarten with age-appropriate learning in pre-literacy and numeracy, as well as social-emotional development.

Benefits of high-quality early childhood education
High-quality early childhood education has significant benefits for individuals and society. Longitudinal studies of high-quality programs show that, as adults, high-quality program participants have higher earnings, commit fewer crimes, and are more likely to hold a job and to have graduated from high school than adults who did not participate in preschool.[49] Children living in poverty and children whose mothers have lower levels of education experience the most benefit.[50]

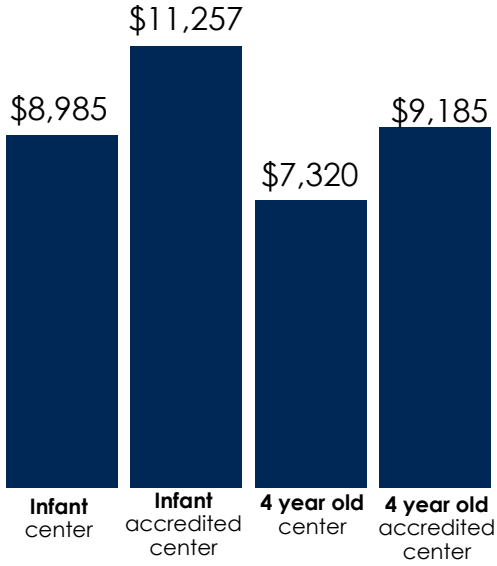
High-quality early childhood education programs for disadvantaged children have an economic return on investment of between 7 and 13 percent per year.[51] Savings come from reduced spending on special education, public assistance, crime deterrence and punishment and chronic health conditions. Also, program participants tend to have higher earnings than nonparticipants. Importantly, an intergenerational effect is possible as social mobility becomes more likely with increased income and fewer health and achievement barriers.

However, some studies have found that some benefits related to academic performance lessen over time or "fade out." It is important for high-quality early childhood education to be followed by high-quality education in later years. Other educational benefits seem to remain more consistently, including reductions in special education placement and grade retentions.[52]

Quality of early childhood education
Not all early childhood education programs are equally effective. Programs must be high-quality to produce these positive outcomes. Enrollment in low-quality programs may do more harm than good.[53]

Experts have identified the following core elements of high-quality early childhood education programs:

Figure 4. **Average annual cost of infant and preschool care in Ohio, 2016**



Source: Childcare Aware of America. Childcare in America: 2016 State Fact Sheets.

- Evidence-based curricula
- Professional development and coaching for teachers
- Organized, positive and engaging classrooms[54]

Cost of early childhood care and education
High-quality early childhood care and education is unaffordable for many families. Costs have increased at double the rate of inflation in the past 20 years.[55] In 2016, the average cost of infant care in Ohio in an accredited child care center was $11,257 per year and $8,985 in a non-accredited center. In 2016, the average annual cost for a 4 year-old child in an accredited center was $9,185 and $7,320 in a non-accredited center (see figure 4).[56] Comparatively, the cost of a year of public college tuition in Ohio was $10,204 in 2016[57] – below the cost of enrolling an infant in an accredited child care center.

Early childhood education in Ohio

Children are not required to participate in formal education until they reach the age of compulsory education, which is 6 years old in Ohio. Parents may choose to enroll their children in early learning programs, which may operate privately or receive public funding. To receive public dollars from either the Ohio Department of Education (ODE) or the Ohio Department of Job and Family Services (ODJFS), early learning providers must follow specific rules and regulations. (See Step Up To Quality box)

From 2013 to 2015, only 45 percent of Ohio's 3 and 4 year-old children were enrolled in any public or private-funded, formal early learning program (see figure 5). The proportion of children at or below 200 percent FPL enrolled was 39 percent.[58] Access to quality early childhood education in Ohio varies, with families in urban centers and rural areas limited in their choices. The number of children who can be served in these areas is often far lower than the number of children who are eligible.

Public spending and funding
Due to the proven importance of high-quality early childhood education and its high cost for families, funding is provided for these programs by federal, state and local government (see figure 6). However, funding levels are not currently sufficient to reach all eligible children.

In the **National Institute for Early Education Research 2016 State of Preschool Yearbook**, Ohio ranked 33rd out of 44 states for its percent of 4 year-olds enrolled in state-funded, public preschool in 2015-2016 (7.8 percent) and 27th in state spending per child ($4,000). However, the report does not include 4 year-olds receiving child care vouchers from ODJFS, and some of these children use vouchers at privately-funded preschools. The District of Columbia serves the highest percentage of 4 year-olds (81.2%) and has the highest spending per child ($16,812).[59] Figure 7 shows Ohio's public preschool per-child spending for years 2002-2016.

Figure 5. **Percent of Ohio and U.S. 3 and 4 year-old children enrolled in a formal early education program by income, 2011-2015**

	Ohio	U.S.
All	45%	47%
Below 200% FPL	39%	40%
At or above 200% FPL	52%	55%

Note: Percentages for all children are from 2013-2015. Percentages for children below and at or above 200% FPL are from 2011-2015.
Source: Population Reference Bureau analysis of data from the U.S. Census Bureau, pooled 2013-15 one-year American Community Survey, as reported by Kids Count Data Center

Social-emotional learning

Social-emotional learning builds skills to engage with others, manage emotions, set and achieve positive goals, show empathy, handle stress, establish and maintain positive relationships and make responsible decisions.[60] Effects are typically strongest with young children, especially when interventions in later years reinforce earlier messages. Strong research evidence has found school-based social-emotional instruction to have the following benefits:

Step Up To Quality

Step Up To Quality (SUTQ) is Ohio's five-star quality rating and improvement system for early care and education programs. It is jointly administered by ODE and ODJFS, and programs funded by both agencies participate. SUTQ provides a consistent definition of quality and recognizes programs that exceed minimum health and safety requirements.

The program and its standards are based on factors which lead to improved outcomes for children, as identified by national research. For example, highly-rated programs require continuing education for teachers and staff, use evidence-based, age-appropriate curricula and make efforts to engage families.[61] Increased staff education requirements are another key component of high-quality rankings, which may be costly for early learning centers to pursue.

The current five-star rating system was implemented in October 2013, but SUTQ was initially launched statewide in 2006. As of July 2017, all early childhood education and special education preschool programs funded by ODE must participate in SUTQ and receive a high-quality rating (three, four or five stars) to maintain state funding. In 2020, licensed child care programs receiving funding from ODJFS will also be required to participate, and they will be required to attain a high-quality rating by 2025. As of September 2017, only 27 percent of child care providers that accept ODJFS child care subsidies were rated, and only 19 percent of programs were rated as high-quality.[62]

An independent evaluation of SUTQ was released in February 2017. The study found that participation in a highly-rated program was associated with higher scores on Ohio's Kindergarten Readiness Assessment, providing evidence that SUTQ is valid and that increasing quality leads to improved outcomes.[63]

Figure 6. **Early childhood education funding sources in Ohio (selected programs)**

Program	Funding source(s)	Cost per child	Eligibility	Hours per week	Children served
State-funded preschool	State (ODE)	$4,000 in SFY 2016	Age 4, at or below 200% FPL	12.5 hours per week	14,765 children served in SFY 2016[64] *(This would have represented an estimated 22.5% of eligible 4 year-old children in 2015)*[65]
State preschool special education*	State (ODE)	$4,000 in SFY 2016 plus differentiated amount based on district state share index and disability category	Ages 3-5 with a disability	10 hours per week minimum	13,556 children served in SFY 2016[66] *(This would have represented 4.9% of all 3 and 4 year-old Ohio children in 2015)*[67]
Head Start**	Primarily federal	$8,168 in FFY (Includes additional services to children and families)[68]	Ages 3-5 at or below 100% FPL	3.5-6 hours per day, 4-5 days per week	30,664 children served in SFY 2016 (including federal and state funding)[69] *(This would have represented an estimated 25% of eligible children in 2014)*[70]
Child care subsidies (Publicly Funded Child Care) for children ages 0-4***	Federal and state (ODJFS)	Co-payment varies based on a sliding fee scale	At or below 130% FPL (initial eligibility) - Assistance provided during a qualifying parental event (work or school)	Eligibility hours vary based on the qualifying event	Approximately 76,366 children ages 0-4 served in October 2014[71] *(This would represent 11% of all Ohio children ages 0-4 in 2014)*[72]

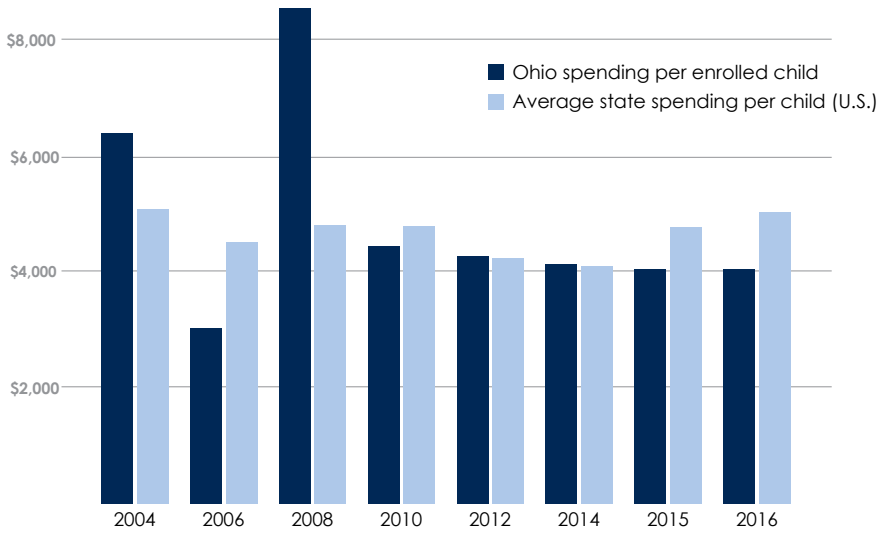
* Federal and state law require Ohio school districts to offer services to children with certain disabilities, including access to preschool. Federal preschool special education is available to children ages 3-5 including kindergarten.
**Head Start is a federally-funded program operated by local community-based organizations. Established in 1965, Head Start is a comprehensive school readiness program for children, birth to age 5, from low-income families. In addition to early childhood education, Head Start provides health services, parent engagement, parenting education and services for children with disabilities. Data in the table does not include Early Head Start.
***Eligible children up to age 12 can receive publicly-funded child care from ODJFS.
Note: This list is not comprehensive of all funding sources of early childhood education.
Source: Ohio Department of Education Office of Early Learning and School Readiness. "Preschool funding models"

- Increased academic achievement
- Increased high school graduation
- Improved social-emotional skills
- Increased school engagement
- Increased self-confidence
- Improved mental health
- Improved youth behavior[73]

Research has demonstrated the effectiveness of a number of school-based social-emotional learning programs such as the Good Behavior Game, Second Step and Promoting Alternative Thinking Strategies (PATHS).[74]

Social-emotional learning in Ohio
Ohio is one of at least 11 states (including Connecticut, Idaho, Illinois, Kansas, Massachusetts, Maine, Pennsylvania, Vermont, Washington and West Virginia) that has specific goals or standards for social-emotional learning.[75] Standards outline what students should know and be able to do at various stages of development or ages. **Ohio's Early Learning and Development Standards: Birth to**

Figure 7. **Annual state spending per child in public preschool, Ohio and average state spending (2004-2016)**



Source: Barnett, Steven et. al. *The State of Preschool 2016*. New Brunswick, NJ: The National Institute for Early Education Research, 2017.

Kindergarten Entry and **Ohio's Learning Standards: Kindergarten Through Grade 3** include social-emotional development.

There is no statewide data on how many schools have implemented social-emotional learning programs. However, Ohio schools are required to implement an evidence-based schoolwide system of positive behavioral interventions and support (PBIS). When implemented well, PBIS complements social-emotional learning by encouraging the creation of safe settings and positive climates. See HPIO's **fact sheet on PBIS** for more information. Effective implementation of these strategies can diminish the need for certain disciplinary techniques such as suspensions and expulsions.

See HPIO's **fact sheet on suspensions and expulsions** for more information on how these disciplinary polices can lead to:

- Academic failure, grade retention and negative attitudes toward school
- Ten times greater likelihood of dropping out of high school
- Higher chance of justice system involvement and incarceration[76]

Examples of local early childhood education initiatives

Cuyahoga County, Cleveland, Columbus, Dayton/Montgomery County and Cincinnati have taken steps to increase access to high-quality pre-K and kindergarten readiness. Programs in Cincinnati and Dayton/Montgomery County are especially notable, as they utilize funding from public levies approved by voters in November 2016.

Launched in August 2007, **Cuyahoga County's Universal Pre-Kindergarten (UPK)** initiative was the first local program in Ohio to expand high-quality pre-K access. UPK provides funding to centers to enhance quality and offers scholarships to low- and moderate-income families. It is funded by a public-private partnership. With a recent decision by the county to allocate $10 million in funding to the program and an additional commitment of nearly $12.9 million in private donations,[77] it is now serving over 4,600 children of ages 3-5.[78]

In March 2014, a public-private partnership launched **PRE4CLE in Cleveland** (part of Cuyahoga County) to expand high-quality preschool slots and increase the number of high-quality rated providers. PRE4CLE is part of **Cleveland's Plan for Transforming Schools**, which aims to reinvent public education in Cleveland. Cleveland providers that choose to participate in PRE4CLE are eligible for funding from UPK. As of December 2016, there were 4,277 children enrolled in high-quality preschools, out of approximately 11,800 children of ages 3-5 in Cleveland, representing 36 percent.[79]

The **Early Start Columbus** initiative began in 2014. The goals of this initiative are that by 2020, all Columbus children will have access to high-quality pre-k and be prepared when entering kindergarten. Nearly 500 children are served due to investments from the state and the City of Columbus.[80]

Dayton is the first Ohio city to offer every one of its nearly 2,000 4 year-olds access to affordable and quality preschool.[81] In November 2016, voters approved a 0.25 percent income tax increase which will generate $4.3 million annually for expanded preschool access.[82] Passage of this income tax increase will enable full funding for eight years. All families are eligible for tuition assistance, but the amount received depends on household income, family size and their selected program's quality rating, with higher amounts allocated for the highest-rated providers.[83]

Cincinnati voters approved a five-year property tax levy in November 2016 which will generate $48 million for the Cincinnati Public Schools, including $15 million to expand high-quality preschool access for 3 and 4 year-old children living at or below 200 percent FPL.[84] Grants will be awarded to preschool providers working to achieve and maintain high-quality ratings. This funding is expected to increase the number of Cincinnati children in preschool to 6,000. With approximately 9,200 3 and 4 year-old children in Cincinnati,[85] 65 percent of these children are expected to be served by year five of the levy.

Policy options to enhance early learning in Ohio

State agencies and policymakers

1. Increase the number of Ohio children served by high-quality child care, preschool, and pre-K by:
   - Expanding eligibility criteria for publicly-funded programs,
   - Increasing state funding for early learning to provide access for more 3 and 4 year-old children and/or
   - Exploring the possibility of more innovative funding mechanisms such as pay-for-success financing (see **HPIO's fact sheet on pay-for-success financing**).
2. Increase the number of Ohio children served by evidence-based home visiting programs by:
   - Expanding eligibility criteria and/or
   - Increasing state funding for Help Me Grow to provide services for more children and families
3. Evaluate the impact of home visiting and high-quality early childhood education on spending in other publicly-funded systems, such as child protection, juvenile justice, corrections, law enforcement, K-12 special education and Medicaid.
4. Encourage community-based partnerships linking early childhood providers, K-12 schools and physical, mental and behavioral health systems, and other entities serving children.
5. Support ongoing training and technical assistance to encourage integration of social-emotional learning programs into academic instruction using Ohio's K-3 standards for social and emotional development.
6. Develop professional standards and training for early childhood educators and administrators that emphasize trauma-informed principles.
7. Recognize and incorporate brain development research when developing state academic and accountability requirements for early learning.
8. Create incentives to encourage early childhood care and education programs to participate in SUTQ and achieve high-quality ratings.
9. Work with local communities implementing innovative early learning initiatives to understand how the state can support these efforts and learn from successful strategies.

Early learning providers

10. Develop partnerships with health systems and local mental health providers to increase access to additional behavioral health services in early learning sites.
11. Integrate trauma-informed strategies into early childhood education programs to support children who have experienced trauma.
12. Provide staff with professional development, support and resources to reduce staff stress levels.
13. Engage parents in meaningful ways that build parent connection to their children's education and to other parents.
14. Provide ongoing professional development and technical support in developmentally-appropriate classroom management, brain development strategies, trauma/trauma-informed care and social-emotional learning.

Notes

1. Gilliam, Walter S. Testimony before U.S. House Committee on Appropriations Subcommittee on Labor, Health & Human Services, Education and Related Services Budget Hearing – Early Education Panel. April 14, 2015. http://medicine.yale.edu/childstudy/zigler/publications/HHRG-114-AP07-Wstate-GilliamW-20150414_251586_5379.pdf; The foundations of lifelong health (InBrief). Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/InBrief-The-Foundations-of-Lifelong-Health-1.pdf
2. Gilliam, Walter S. Testimony before U.S. House Committee on Appropriations Subcommittee on Labor, Health & Human Services, Education and Related Services Budget Hearing – Early Education Panel. April 14, 2015. http://medicine.yale.edu/childstudy/zigler/publications/HHRG-114-AP07-Wstate-GilliamW-20150414_251586_5379.pdf.
3. The foundations of lifelong health (InBrief). Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/InBrief-The-Foundations-of-Lifelong-Health-1.pdf. See also Karoly, L. A., Kilburn, M. R., & Cannon, J. S. Early childhood interventions: Proven results, future promise. Santa Monica, CA: RAND Corporation, 2005.
4. Ibid.
5. Analysis of data from the Ohio Department of Health and U.S. Census Bureau as reported by Ackerman, Susan and Lauren Monowar-Jones. "How is Ohio investing in children?" Testimony before the Senate Education and Health and Human Services Committees, Oct. 17, 2016.
6. Data from Population Reference Bureau analysis of data from the U.S. Census Bureau, American Community Survey as reported by Kids Count Data Center. Accessed Oct. 17, 2017. http://datacenter.kidscount.org/data#OH/2/0/char/0.
7. "Education Matters: Children's Brain Development." U.S. Department of Education. https://sites.ed.gov/fbnp/files/2013/07/Education-Matters-CFBNP-Childrens-Brain-Development.pdf
8. Gilliam, Walter S. Testimony before U.S. House Committee on Appropriations Subcommittee on Labor, Health & Human Services, Education and Related Services Budget Hearing – Early Education Panel. April 14, 2015. http://medicine.yale.edu/childstudy/zigler/publications/HHRG-114-AP07-Wstate-GilliamW-20150414_251586_5379.pdf.
9. The Science of Early Childhood Development (InBrief). Center on the Developing Child, 2007. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2007/03/InBrief-The-Science-of-Early-Childhood-Development2.pdf
10. Gilliam, Walter S. Testimony before U.S. House Committee on Appropriations Subcommittee on Labor, Health & Human Services, Education and Related Services Budget Hearing – Early Education Panel. April 14, 2015. http://medicine.yale.edu/childstudy/zigler/publications/HHRG-114-AP07-Wstate-GilliamW-20150414_251586_5379.pdf.
11. The Science of Early Childhood Development (InBrief). Center on the Developing Child, 2007. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2007/03/InBrief-The-Science-of-Early-Childhood-Development2.pdf
12. From Best Practices to Breakthrough Impacts: A Science-Based Approach to Building a More Promising Future for Young Children and Families. Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2016/05/From_Best_Practices_to_Breakthrough_Impacts-4.pdf. See also Ludy-Dobson, Christine R. and Bruce D. Perry. "The role of healthy relational interactions in buffering the impact of childhood trauma," in Working with children to heal interpersonal trauma: The power of play, ed. Eliana Gil. (The Guilford Press, 2010), 26-43.
13. Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function: Working Paper No. 11. Center on the Developing Child, 2011. http://developingchild.harvard.edu/wp-content/uploads/2011/05/How-Early-Experiences-Shape-the-Development-of-Executive-Function.pdf.
14. Ibid. See also Kochanska, G., K. Murray and K.C. Coy. "Inhibitory control as a contributor to conscience in childhood: From toddler to early school age." Child Development 68, no. 2 (1997): 263-277.
15. Fernald, A. and A. Weisleder. "Twenty years after 'Meaningful differences,' it's time to reframe the 'Deficit' debate about the importance of children's early language experience." Human Development 58, No. 1 (2015): 1-4.
16. Aubrey, C., R. Godfrey and S. Dahl. "Early mathematics development and later achievement: Further evidence." Mathematics Education Research Journal 18, No. 1 (2006): 27-46
17. Cohen, Julie, et al. Helping young children succeed: Strategies to promote early childhood social and emotional development. Research and Policy Report. Washington, DC: National Conference of State Legislatures, 2005.
18. Ibid.
19. The foundations of lifelong health (InBrief). Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/InBrief-The-Foundations-of-Lifelong-Health-1.pdf.

Notes (cont.)

20. Data from Population Reference Bureau analysis of data from the U.S. Census Bureau, 2015 American Community Survey as reported by Kids Count Data Center. Accessed Oct. 17, 2017. http://datacenter.kidscount.org/data/tables/7867-children-ages-0-to-8-below-200-percent-poverty?loc=37&loct=2#detailed/2/37/false/573/any/15173,15174.
21. The health and equity impacts of expanded access to preschool: Cincinnati's Fork in the Road. Human Impact Partners, August 2016. http://www.humanimpact.org/wp-content/uploads/Cincinnati-Preschool-HIA_Full-Report_final.pdf
22. Hernandez, D. J. Double Jeopardy: How Third-Grade Reading Skills and Poverty Influence High School Graduation. Baltimore, MD: Annie E. Casey Foundation, 2011.
23. The Science of Early Childhood Development (InBrief). Center on the Developing Child, 2007. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2007/03/InBrief-The-Science-of-Early-Childhood-Development2.pdf. See also Ludy-Dobson, Christine R. and Bruce D. Perry. "The role of healthy relational interactions in buffering the impact of childhood trauma," in Working with children to heal interpersonal trauma: The power of play, ed. Eliana Gil. (The Guilford Press, 2010), 26-43.
24. The foundations of lifelong health (InBrief). Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/InBrief-The-Foundations-of-Lifelong-Health-1.pdf.
25. Ibid.
26. Gilliam, Walter S. Testimony before U.S. House Committee on Appropriations Subcommittee on Labor, Health & Human Services, Education and Related Services Budget Hearing – Early Education Panel. April 14, 2015. http://medicine.yale.edu/childstudy/zigler/publications/HHRG-114-AP07-Wstate-GilliamW-20150414_251586_5379.pdf.
27. Barth, Richard P., et. al. Developmental Status and Early Intervention Service Needs of Maltreated Children. Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, 2008. Analysis of data from the National Survey of Child and Adolescent Well-Being
28. Bartlett, J. D., S. Smith and E. Bringewatt. Helping young children who have experienced trauma: Policies and strategies for early care and education. National Center for Children in Poverty, 2017. Accessed August 6, 2017. https://childtrends-ciw49tixgw5lbab.stackpathdns.com.
29. The foundations of lifelong health (InBrief). Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/InBrief-The-Foundations-of-Lifelong-Health-1.pdf.
30. Fernald, A. and A. Weisleder. "Twenty years after 'Meaningful differences,' it's time to reframe the 'Deficit' debate about the importance of children's early language experience." Human Development 58, No. 1 (2015): 1-4.
31. Gruendel, J. Two (or more) generation frameworks: A look across and within. Annie E. Casey Foundation, 2014. http://b.3cdn.net
32. The foundations of lifelong health (InBrief). Center on the Developing Child, 2016. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2015/05/InBrief-The-Foundations-of-Lifelong-Health-1.pdf.
33. Ibid.
34. Heckman, James. J. Schools, Skills and Synapses. Economic Inquiry 46, No. 3 (2008): 289-324. doi: 10.1111/j.1465-7295.2008.00163.x
35. Ibid.
36. Groundwork Ohio. Early childhood education: Laying the groundwork for a more successful Ohio.
37. Karoly, L. A., Kilburn, M. R., & Cannon, J. S. Early childhood interventions: Proven results, future promise. Santa Monica, CA: RAND Corporation, 2005.
38. Home visiting matters: An Ohio primer. Voices for Ohio's Children. March 2017. http://docs.wixstatic.com/ugd/3984bb_5910d60af22e487597a9d196e3c0c3a5.pdf
39. Gilliam, Walter S. Testimony before U.S. House Committee on Appropriations Subcommittee on Labor, Health & Human Services, Education and Related Services Budget Hearing – Early Education Panel. April 14, 2015. http://medicine.yale.edu/childstudy/zigler/publications/HHRG-114-AP07-Wstate-GilliamW-20150414_251586_5379.pdf.
40. Health Resources and Services Administration. "Home Visiting Program State Fact Sheets: Ohio." https://mchb.hrsa.gov/sites/default/files/mchb/MaternalChildHealthInitiatives/HomeVisiting/pdf/oh.pdf
41. Analysis of data from the Ohio Department of Health and U.S. Census Bureau as reported by Ackerman, Susan and Lauren Monowar-Jones. "How is Ohio investing in children?" Testimony before the Senate Education and Health and Human Services Committees, Oct. 17, 2016.
42. SPARK counties include Ashland, Butler, Clark, Cuyahoga, Darke, Franklin, Hamilton, Ottawa, Ross, Stark and Summit. Information from "SPARK Ohio locations." Early Childhood Resource Center. Accessed Oct. 9, 2017. http://www.ecresourcecenter.org/spark-ohio-locations.
43. Fischbein, Rebecca, et. al. "SPARK Ohio: An early childhood intervention program description and evaluation." The International Journal of Early Childhood Learning 23, No. 4 (2016). http://www.ecresourcecenter.org/uploads/spark-publication.pdf
44. Information provided by Jennifer Haude and Joni Close via email. Early Childhood Resource Center and Sisters of Charity Foundation of Canton. Provided Oct. 19, 2017.
45. Every Child Succeeds. 2014 Report Card. November 2014. http://everychildsucceeds.webfeat.net/wp-content/uploads/2014/12/2014.pdf
46. "Nurse-Family Partnership." County Health Rankings and Roadmaps, What Works for Health. Accessed Sept. 21, 2017. http://www.countyhealthrankings.org/policies/nurse-family-partnership-nfp
47. "Healthy Families America." County Health Rankings and Roadmaps, What Works for Health. Accessed Sept. 21, 2017. http://www.countyhealthrankings.org/policies/healthy-families-america-hfa
48. "Parents as Teachers." County Health Rankings and Roadmaps, What Works for Health. Accessed Sept. 21, 2017. http://www.countyhealthrankings.org/policies/parents-teachers-pat
49. Elango, Sneha, Jorge Luis Garcia, James J. Heckman and Andres Hojman. "Early Childhood Education," in Economics of means-tested transfer programs in the United States (Vol. 2), ed. Moffitt, Robert A. (The University of Chicago Press, 2016); Karoly, L. A., Kilburn, M. R., & Cannon, J. S. Early childhood interventions: Proven results, future promise. Santa Monica, CA: RAND Corporation, 2005http://www.peelearlyyears.com/pdf/Research/INTERNATIONAL%20Early%20Years/Perry%20Project.pdf.
50. Ibid. See also Duncan, G. J. and A.J. Sojourner. "Can intensive early childhood intervention programs eliminate income-based cognitive and achievement gaps?" Journal of Human Resources, 48 No. 4 (2013): 945-968.
51. Jorge Luis Garcia, James J. Heckman, Duncan Ermini Leaf and Maria Jose Prados. "The life cycle benefits of an influential early childhood program." Working paper No. 22993. Cambridge, MA: National Bureau of Economic Research (2016); Five numbers to remember about early childhood development. Center on the Developing Child, 2009. https://46y5eh11fhgw3ve3ytpwxt9r-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Five-Numbers-to-Remember-About-Early-Childhood-Development-updated.pdf
52. Karoly, L. A., Kilburn, M. R., & Cannon, J. S. Early childhood interventions: Proven results, future promise. Santa Monica, CA: RAND Corporation, 2005
53. Quality: What it is and why it matters in early childhood education. Schuyler Center for Analysis and Advocacy. September 2012. https://www.scaany.org/documents/quality_earlyed_scaapolicybrief_sept2012.pdf
54. Phillips, Deborah H., et. al. Puzzling it out: The current state of scientific knowledge on pre-kindergarten effectiveness (A consensus statement). The Brookings Institution and Duke University Center for Child and Family Policy, 2017.
55. Bureau of Labor Statistics as reported by AEI. Price changes (1996-2016): Selected consumer goods and services.
56. State Child Care Facts in the State of Ohio, 2016. Child Care Aware of America. http://usa.childcareaware.org/wp-content/uploads/2016/10/Ohio.pdf
57. Ohio Cost of Child Care, 2016. Child Care Aware of America. http://usa.childcareaware.org/wp-content/uploads/2016/12/State-Fact-Sheets_Ohio.pdf
58. Data from Population Reference Bureau analysis of data from the U.S. Census Bureau, American Community Survey as reported by Kids Count Data Center. Accessed Oct. 17, 2017. http://datacenter.kidscount.org/data#OH/2/0/char/0.
59. Barnett, Steven, et. al. The State of Preschool 2016. New Brunswick, NJ: The National Institute for Early Education Research, 2017.
60. How children's social competence impacts their well-being in adulthood: Findings from a 20-year study on the outcomes of children screened in kindergarten. Robert Wood Johnson Foundation, 2015. Accessed Aug. 7, 2017. https://www.rwjf.org/content/dam/farm/reports/issue_briefs/2015/rwjf421663.
61. Standards for Programs. Ohio Department of Education and Department of Job and Family Services. http://jfs.ohio.gov/cdc/docs/programstandards.stm
62. Data provided by Groundwork Ohio via email. Oct. 23, 2017.
63. Compass evaluation and research. Ohio's SUTQ validation study results. February 2017. http://earlychildhoodohio.org/sutq/pdf/SUTQValidationStudy2017.pdf
64. Barnett, Steven, et. al. The State of Preschool 2016. New Brunswick, NJ: The National Institute for Early Education Research, 2017.
65. 2015 estimated population of four year-old children (65,583) at or below 200% FPL obtained from the Ohio Medicaid Assessment Survey Child Dashboard. http://grcapps.osu.edu/dashboards/OMAS/child/
66. Barnett, Steven, et. al. The State of Preschool 2016. New Brunswick, NJ: The National Institute for Early Education Research, 2017.
67. Ibid.
68. Ibid.
69. Ibid.
70. 2014 estimated population of children ages 3-5 living below FPL (121,000) obtained from Groundwork Ohio. Leaving young children behind: A lost opportunity for success and workforce success. https://docs.wixstatic.com/ugd/d2fbfd_7e0b46601bb24334a04ef988ed82f7d5.pdf
71. Information provided by Groundwork Ohio via phone. Sept. 13, 2017.
72. Information provided by Susan Ackerman via email. Sept. 7, 2017.
73. "School-based social and emotional instruction." County Health Rankings and Roadmaps, What Works for Health. Accessed Sept. 21, 2017. http://www.countyhealthrankings.org/policies/school-based-social-and-emotional-instruction
74. CASEL Guide: PreK and Elementary Evidence-Based Programs. CASEL. Accessed Sept. 21, 2017. http://www.casel.org/guide/programs/. See also "Good Behavior Game." American Institutes for Research. Accessed Sept. 22, 2017. http://www.air.org/topic/p-12-education-and-social-development/good-behavior-game
75. Dusenbury, Linda and Roger Weissberg. "Social Emotional Learning in Elementary School: Preparation for Success." Edna Bennett Pierce Prevention Research Center, Pennsylvania State University, 2017. https://www.rwjf.org/content/dam/farm/reports/issue_briefs/2017/rwjf436221.
76. Policy statement of expulsion and suspension policies in early childhood settings. U.S. Department of Health and Human Services and U.S. Department of Education. https://www2.ed.gov/policy/gen/guid/school-discipline/policy-statement-ece-expulsions-suspensions.pdf
77. Information provided by Michelle Connavino (PRE4CLE) via email. Oct. 11. 2017.
78. "Cuyahoga County surpasses pre-K goal: more than 2,600 new spots available." Cuyahoga County Insider. Sept. 12, 2017. http://www.cleveland.com/cuyahoga-county/index.ssf/2017/09/cuyahoga_county_expands_pre-k_program.html
79. Pre4CLE 2016 Annual Report. https://pre4cle.org/wp-content/uploads/2017/06/2016-PRE4CLE-Annual-Report.pdf
80. "New Compact for Education." City of Columbus Department of Education. https://www.columbus.gov/WorkArea/DownloadAsset.aspx?id=77257. Information also provide by Ann Lockett via phone. Oct. 3, 2017.
81. City of Learners 2017 Action Report: Year 3. http://www.daytonohio.gov/ArchiveCenter/ViewFile/Item/962
82. Kelly, Jeremy P. and Cornelius Frolik. "$34M for preschool funding approved in Dayton." Dayton Daily News. Apr. 19, 2017. http://www.mydaytondailynews.com/news/34m-for-preschool-funding-approved-dayton/2yEFDRakLzN6Gs1FVhg7tM/
83. Kelly, Jeremy P. "Tuition help offered to preschool families in Dayton, Kettering." Dayton Daily News. Feb. 5, 2017. http://www.mydaytondailynews.com/news/tuition-help-offered-preschool-families-dayton-kettering/bcfN7lqRspj2bSKFZwzwzL/
84. Cincinnati Preschool Program Fact Sheet. United Way of Greater Cincinnati. January 2017. http://www.uwgc.org/docs/default-source/cps-levy/fact-sheet---1-23-17.docx?sfvrsn=0
85. Information provided by Margaret Hulbert and Stephanie Byrd (United Way of Greater Cincinnati) via email. Oct. 12, 2017.

For more information, see our **"Intersections between education and health" online resource page**, which will be continually updated throughout 2017.

Authors

Nancy Nestor-Baker, Ph. D., Nestor-Baker Strategies, LLC
Rebecca Carroll, MPA, Health Policy Institute of Ohio