# FIVE NUMBERS TO REMEMBER ABOUT EARLY CHILDHOOD DEVELOPMENT

700 PER SECOND

18 MONTHS

90-100%

3:1 ODDS

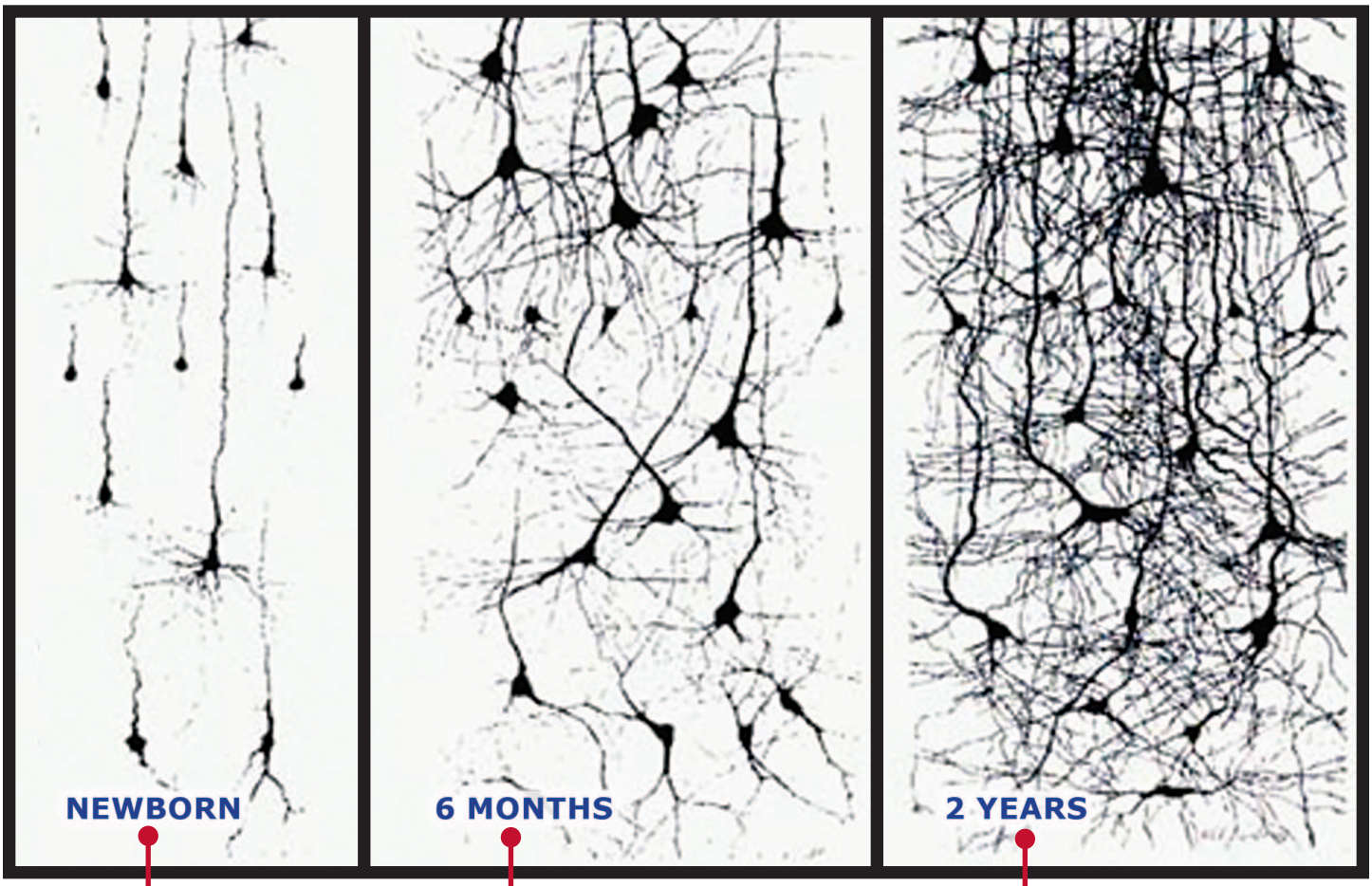
4-9 DOLLARS

This feature highlights five numbers to remember about the development of young children. Learn how the numbers illustrate such concepts as the importance of early childhood to the learning, behavior, and health of later life and why getting things right the first time is easier and more effective than trying to fix them later. This feature is also available in a web-based slideshow format at http:*//developingchild.harvard.edu/resources/multimedia/interactive_features/five-numbers/*

For more resources from the Center on the Developing Child at Harvard University visit http: *//developingchild.harvard.edu/resources/*

# FIVE NUMBERS TO REMEMBER ABOUT EARLY CHILDHOOD DEVELOPMENT

## 700 NEW NEURAL CONNECTIONS PER SECOND

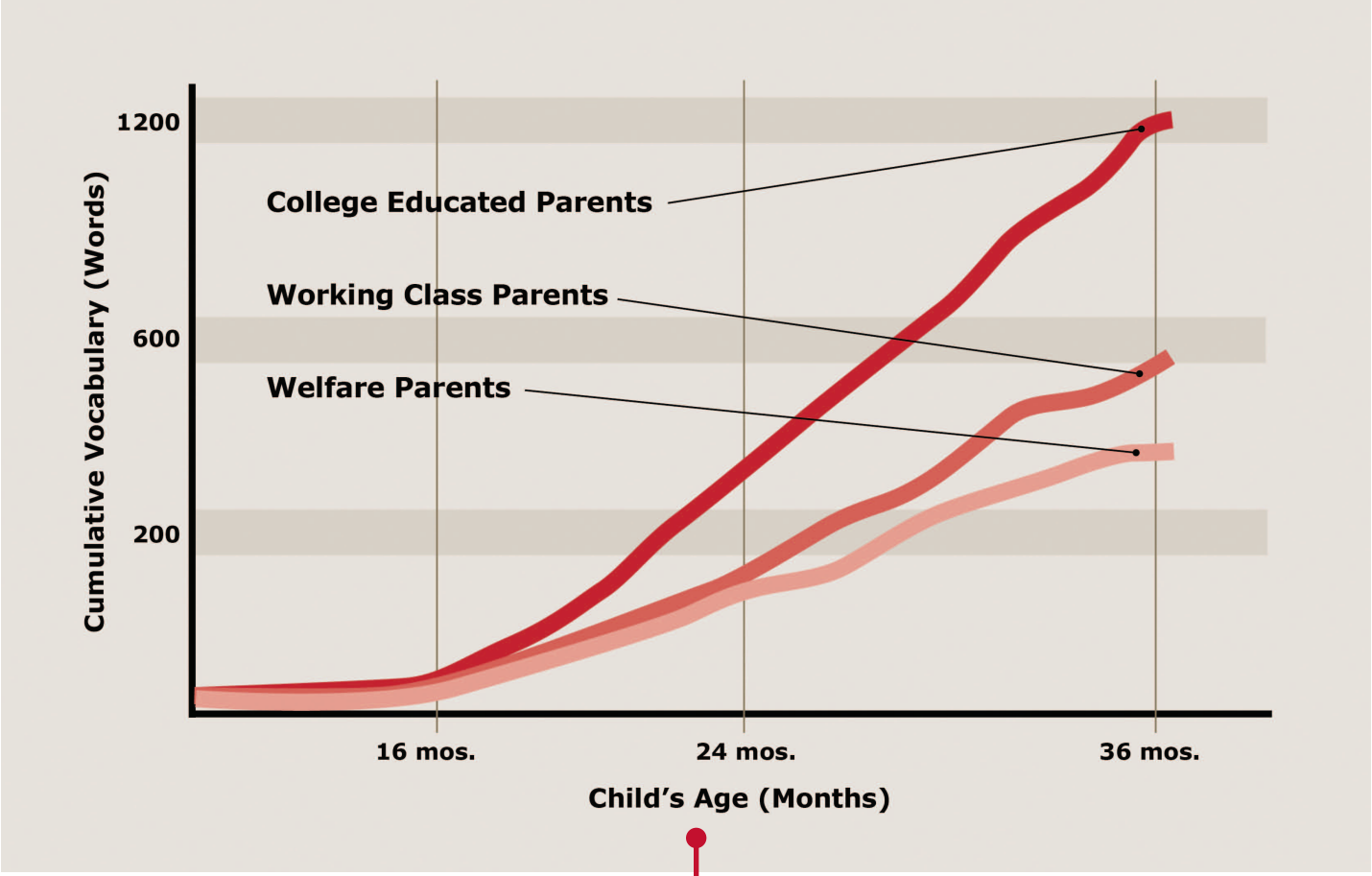



**1**

The early years matter because, in the first few years of life, 700 new neural connections are formed every second. Neural connections are formed through the interaction of genes and a baby's environment and experiences, especially "serve and return" interaction with adults, or what developmental researchers call contingent reciprocity. These are the connections that build brain architecture – the foundation upon which all later learning, behavior, and health depend.

*Image source: Conel, JL. The postnatal development of the human cerebral cortex. Cambridge, Mass: Harvard University Press, 1959*

# 18 18 MONTHS: AGE AT WHICH DISPARITIES IN VOCABULARY BEGIN TO APPEAR




## 2

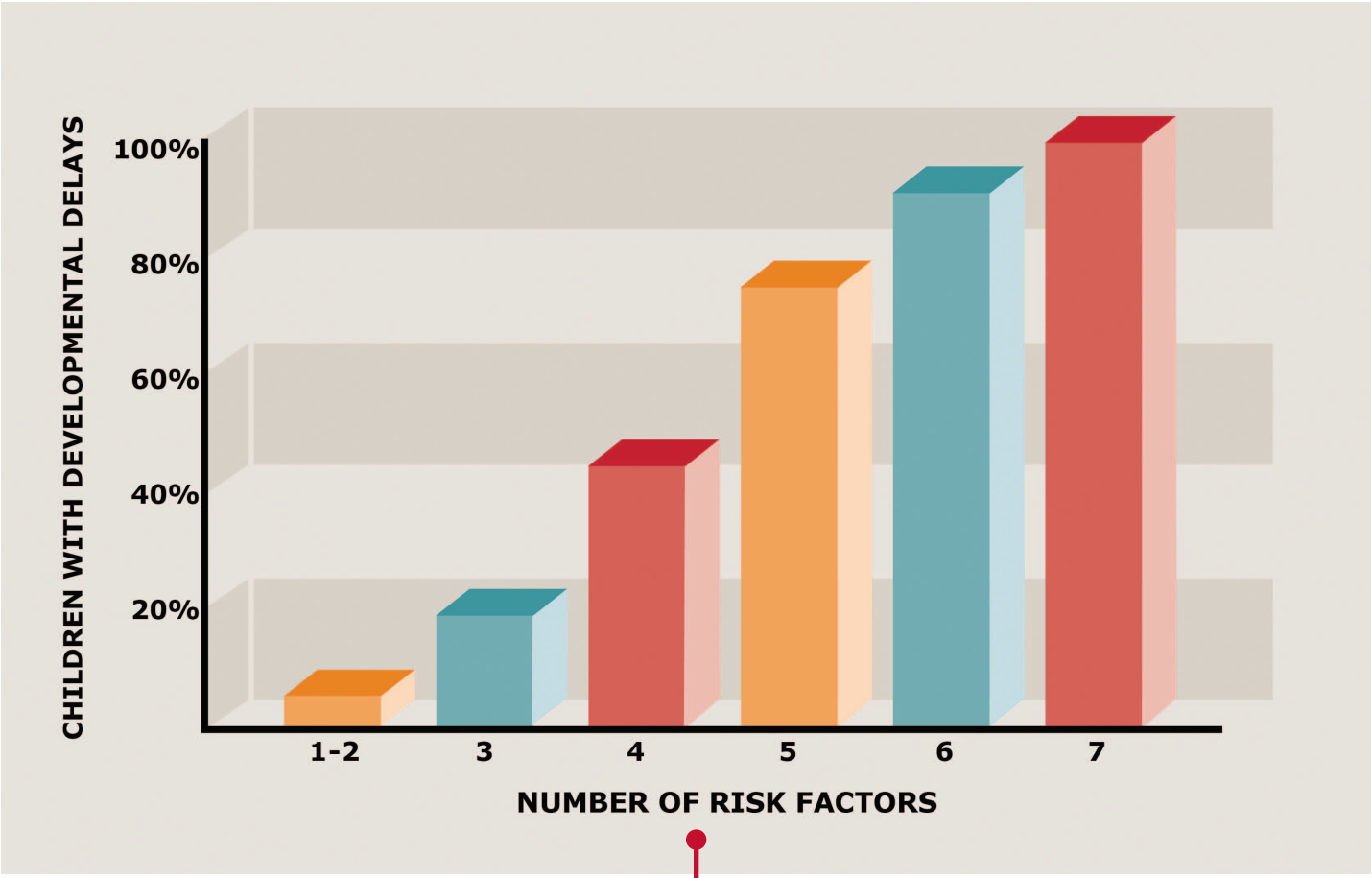
Early experiences and the environments in which children develop in their earliest years can have lasting impact on later success in school and life. Barriers to children's educational achievement start early, and continue to grow without intervention. Differences in the size of children's vocabulary first appear at 18 months of age, based on whether they were born into a family with high education and income or low education and income. By age 3, children with college-educated parents or primary caregivers had vocabularies 2 to 3 times larger than those whose parents had not completed high school. By the time these children reach school, they are already behind their peers unless they are engaged in a language-rich environment early in life.

*Source: Hart, B., & Risley, T. (1995). Meaningful differences in the everyday experiences of young American children. Baltimore, MD: Brookes.*

# FIVE NUMBERS TO REMEMBER ABOUT EARLY CHILDHOOD DEVELOPMENT

## 90-100

## 90-100% CHANCE OF DEVELOPMENTAL DELAYS WHEN CHILDREN EXPERIENCE 6-7 RISK FACTORS

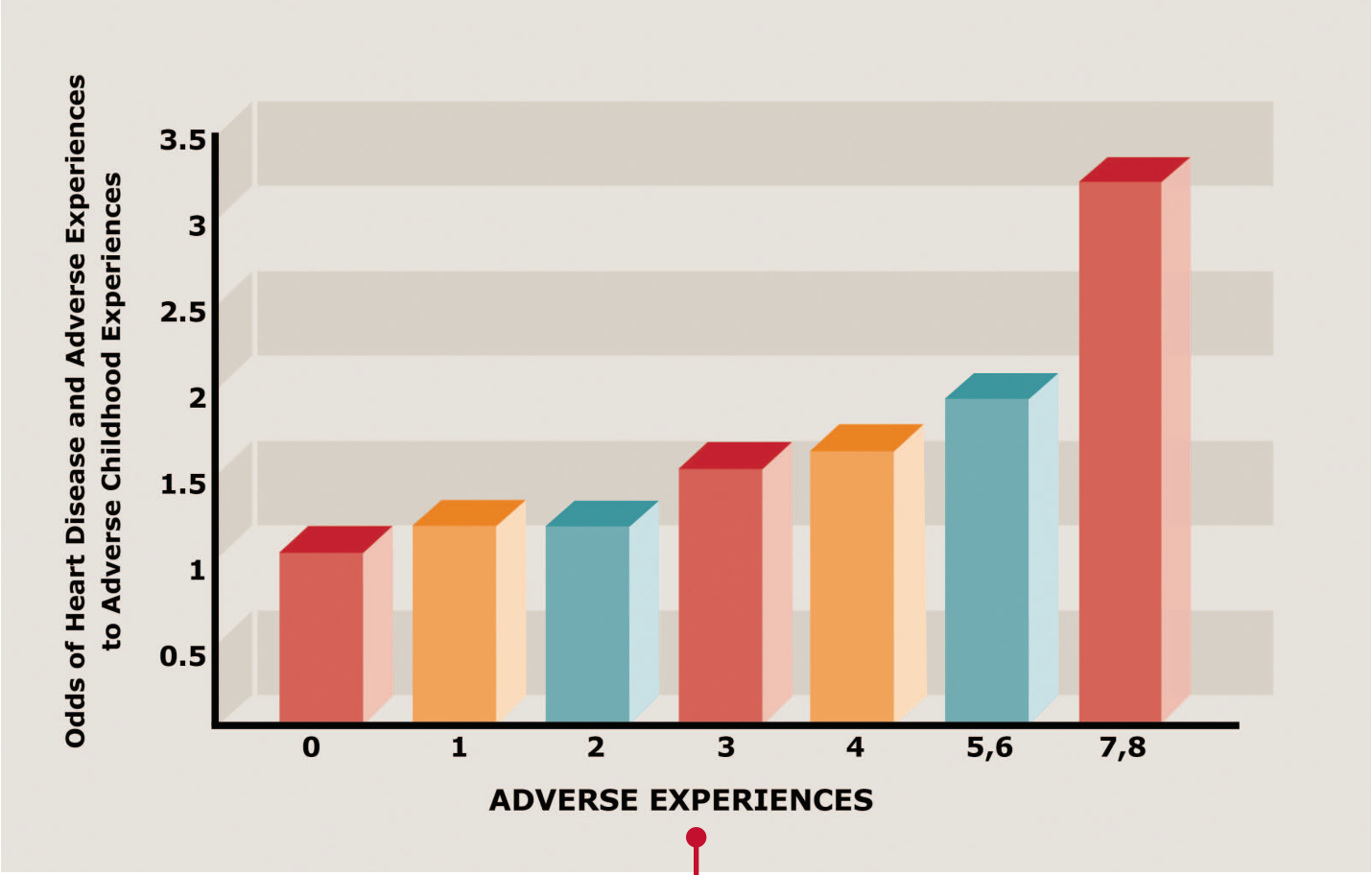



## 3

Significant adversity impairs development in the first three years of life—and the more adversity a child faces, the greater the odds of a developmental delay. In fact, risk factors such as poverty, caregiver mental illness, child maltreatment, single parent, and low maternal education have a cumulative impact: children exposed to 6 or 7 of these risks face a 90-100% likelihood of having one or more delays in their cognitive, language, or emotional development.

*Source: Barth, et al. (2008)*

# 3:1 3:1 ODDS OF ADULT HEART DISEASE AFTER 7-8 ADVERSE CHILDHOOD EXPERIENCES

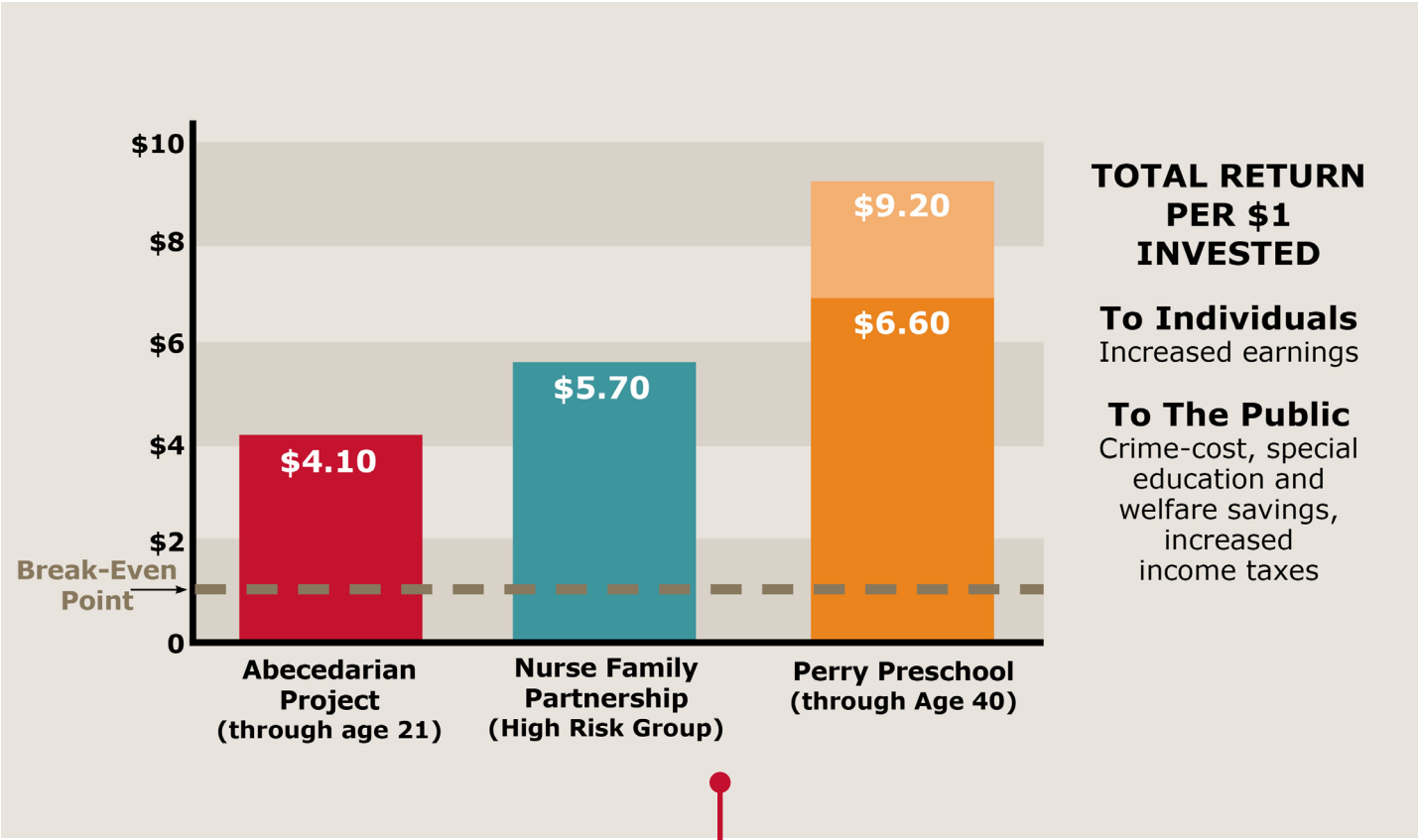



## 4

Early experiences actually get into the body, with lifelong effects—not just on cognitive and emotional development, but on long term physical health as well. A growing body of evidence now links significant adversity in childhood to increased risk of a range of adult health problems, including diabetes, hypertension, stroke, obesity, and some forms of cancer. This graph shows that adults who recall having 7 or 8 serious adverse experiences in childhood are 3 times more likely to have cardiovascular disease as an adult. And children between birth and three years of age are the most likely age group to experience some form of maltreatment–16 out of every thousand children experience it.

*Source: Dong et al. (2004)*

# 4-9 $4 - $9 IN RETURNS FOR EVERY DOLLAR INVESTED IN EARLY CHILDHOOD PROGRAMS




5

Providing young children with a healthy environment in which to learn and grow is not only good for their development—economists have also shown that high-quality early childhood programs bring impressive returns on investment to the public. Three of the of the most rigorous long-term studies found a range of returns between $4 and $9 for every dollar invested in early learning programs for low-income children. Program participants followed into adulthood benefited from increased earnings while the public saw returns in the form of reduced special education, welfare, and crime costs, and increased tax revenues from program participants later in life.

*Sources: Masse, L. and Barnett, W.S., A Benefit Cost Analysis of the Abecedarian Early Childhood Intervention (2002); Karoly et al., Early Childhood Interventions: Proven Results, Future Promise (2005); Heckman et al., The Effect of the Perry Preschool Program on the Cognitive and Non-Cognitive Skills of its Participants (2009)*

## WHAT THESE FIVE NUMBERS TELL US

700 PER SECOND

18 MONTHS

90-100%

3:1 ODDS

4-9 DOLLARS

1. Getting things right the first time is easier and more effective than trying to fix them later.
2. Early childhood matters because experiences early in life can have a lasting impact on later learning, behavior, and health.
3. Highly specialized interventions are needed as early as possible for children experiencing toxic stress.
4. Early life experiences actually get under the skin and into the body, with lifelong effects on adult physical and mental health.
5. All of society benefits from investments in early childhood programs.