DATA BOOK 2010

The State of Children in Memphis and Shelby County

ISSUE 5

THE URBAN CHILD INSTITUTE™

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Index

Mission

The Urban Child Institute is a non-profit organization dedicated to the well-being and health of children from conception to three years old in Memphis and Shelby County. We are a data-driven, result-oriented coalition of community researchers, strategists, and practitioners who share a common goal of turning research into actionable knowledge. The Urban Child Institute is working to become a recognized leader in child advocacy research, a trustworthy community partner, and a resource for expertise, advice, and collaboration for those who want to improve the lives of children in Memphis, Tennessee.

The State of Children in Memphis & Shelby County was created by the Institute and first published in 2006. The purpose was to collect, in one document, the best available data on children in Memphis and Shelby County. Many individuals and organizations had benefited from pieces of that data, but the 2006 *Data Book* was the first time that the data had been assembled in a single document and with professional analysis. This 2010 volume builds upon previous editions and includes several new features:

- a heightened focus on our community's youngest children, specifically those from birth to age three.
- an expanded discussion of early brain development that draws upon the most up-to-date neuroscientific research.
- new sources of data, including the Early Childhood Development Public Opinion Poll, reports provided by Memphis City Schools, and data and analysis from Porter-Leath's Early Head Start program.
- a Data Appendix in which we provide a more detailed examination of the sources, strengths, and limitations of the data used throughout the book.

We have also continued our special interest section this year with a focus on the importance of breastfeeding.

The data have been organized in seven segments. The segments are:

1. Baby's Brain Begins Now: an overview of brain development from conception to age three.
2. Demographics: a necessary overview of important statistics on Memphis and Shelby County.
3. Health: an examination of the risks related to birth outcomes, followed by our special interest section on breastfeeding.
4. Family and Home Environment: a report on Shelby County parents' knowledge about child development.
5. Education: a discussion of the importance of early childhood learning experiences.
6. Community: examines the effects of neighborhood influences on children's well-being.
7. Best Practices: a profile of Porter-Leath's Early Head Start program.

We at The Urban Child Institute hope that this document will be useful for government leaders, education and medical professionals, grant writers, and all community stakeholders who desire positive changes in Memphis and Shelby County.

The more we know about the importance of early childhood development, the better able we will be to promote the well-being of our youngest citizens.

Introduction

Since its first edition in 2006, the *Data Book* has examined the risks faced by young children in Memphis and Shelby County. We have shown that these risks do not affect all children equally: a child's chances of enjoying health and well-being depend largely on her family's race, income, and address.

The new 2010 *Data Book* confirms that little has changed in the past year. Mortality, poverty, and underachievement among our community's children continue to exceed national averages. However, among the causes for concern we also found signs of hope.

On the positive side:

- Shelby County's infant mortality rate declined for the second year in a row.
- The rate of low birth-weight births declined for the third year in a row.
- Following a steep three-year rise, the percentage of mothers receiving no prenatal care dropped this year.

On the negative side:

- The gap in infant mortality between black babies and white babies continued to increase.
- Births to teens and births to single mothers continued to increase.
- Half of our children are poor or low-income.

Here are some other highlights of the 2010 *Data Book*:

- More families who rent are paying at least 35 percent of their incomes for housing (see the chapter on Demographics).
- Education pays: median income for high school graduates is 38 percent higher than that of dropouts (Demographics chapter).
- The percentage of mothers who smoke during pregnancy remains lower than in 2000, and is consistently lower than the rate for Tennessee (see the Health chapter).
- According to the 2009 Early Childhood Development Public Opinion Poll, parents understand that children's experiences in their first three years influence early brain development. However, they don't seem to think that public investments should target this age group (Family and Home Environment chapter).
- Pre-kindergarten boosts children's cognitive development. Children who attend Memphis City Schools' Pre-K program in the year before kindergarten begins are more prepared for school than children who spend the year in other types of care (Education chapter).
- Neighborhoods have important effects on development. Neighborhood characteristics are associated with child outcomes, including health, educational attainment, early parenthood, and adult earnings (see the Community chapter).
- Early Head Start programs such as the one founded by Porter-Leath improve children's cognitive development and parents' effectiveness (see the chapter on Best Practices).

Acknowledgments

600 Jefferson Avenue, Memphis, TN 38105
http://www.theurbanchildinstitute.org

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The Urban Child Institute's *The State of Children in Memphis & Shelby County: Data Book* could not be produced and distributed without the help of numerous people.

The publication was assembled and produced under the general direction of Catherine Joyce, M.A. with help from Research Associates Marc Goodman-Bryan, M.A., and Katie Midgley, M.S., as well as Resident Fellow Doug Imig, Ph.D., and The University of Memphis' Center for Community Building and Neighborhood Action (CBANA) director Phyllis Betts, Ph.D. We are also appreciative for contributions from Resident Fellow Henry Herrod, M.D., and Resident Fellow Marion Hare, M.D.

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The 2010 *Data Book* can be viewed and downloaded at www.theurbanchildinstitute.org

Shelby County at a Glance

Indicator (Year of Latest Date in Parentheses)	Raw number of latest year	Raw number of previous year	Increased (+) Decreased (–) Same (=)	Change Better (B) Worse (W)
Population				
Total Population (2008)	906,825	910,100	–	W
Child Population (2008)	245,101	249,093	–	W
Child Population Under 6 (2008)	81,333	84,744	–	W
Child Population Under 3 (2008)	44,810	40,451	+	B
Live Births (2008)*	15,045	15,234	–	W
Family				
Families (2008)	219,926	220,560	–	W
Families with Children (2008)	119,824	117,509	+	B
Married Parent Families with Children (2008)	63,209	59,856	+	B
Single Parent Families with Children (2008)	56,615	57,653	–	B
Live Births to Unmarried Mothers (2008)*	9,228	8,954	+	W
Live Births to Teen Mothers (2008)*	2,334	2,352	–	B
Economic Security				
Median Family Income (2008)	$58,055	$56,803	+	B
Median Family Income of Families with Children (2008)	51,259	$48,558	+	B
Total Population Below Poverty (2008)	159,631	178,796	–	B
Children Below Poverty (2008)	67,002	74,895	–	B
People who Moved within the County (2008)	139,989	129,876	+	W
Education				
Pre-K or Child Care Enrollment (2008)	14,974	17,196	–	W
Undergraduate College Enrollment (2008)	45,734	45,394	+	B
Memphis City Schools Graduation Rate (2009)**	62.1	66.9	–	W
Memphis City Schools Cohort Dropout Rate (2009)**	25.9	19.3	+	W
Memphis City Schools Composite ACT Achievement(2009)**	17.5	17.7	–	W
Child Health				
Low Birth Weight Live Births (2008)*	1,648	1,698	–	B
Infant Death (2007)*	193	209	–	B

Notes: Unless otherwise specified, all data is from U.S. Census Bureau, American Community Survey.

* Tennessee Department of Health, Vital Statistics.

** Tennessee Department of Education, Report Card.

Baby's Brain Begins Now: Conception to Age 3

The fact that children are affected by their surroundings is too obvious to bear repeating. Child development specialists have produced decades of research showing that the environment of a child's earliest years can have effects that last a lifetime. Thanks to recent advances in technology, we have a clearer understanding of how these effects are related to early brain development. Neuroscientists can now identify patterns in brain activity that appear to be associated with some types of negative early experiences.[1]

But the long-term effects of early stress, poverty, neglect and maltreatment were well documented and virtually uncontested years before we could "see" them with brain scanning tools. So why should we need an understanding of brain development to show us how important children's earliest experiences are for their well-being? Isn't neuroscience just telling us what we already know?

Actually, there are several reasons why we should pay attention to the evidence provided by neuroscience. For instance, it may help us learn exactly *how* experiences affect children. This knowledge can aid our efforts to help children who are at risk and to undo, where possible, the effects of early adversity. Additionally, neuroscientists may help us learn *when* experiences affect children. If there are specific periods of vulnerability to certain types of experiences, then understanding these patterns will improve our attempts at intervention.

So far, neuroscience has not found conclusive answers to these questions. However, dramatic advances continue to be made in the field, and brain research continues to enhance education and intervention efforts. Accordingly, we have expanded this year's Brain Development chapter to include additional information reflecting the latest scientific research.

We begin with a thumbnail sketch of brain anatomy, followed by a closer look at neurons and synapses, the brain's communication specialists. We then discuss some unique features of early brain development and show how they make the first three years of life an especially critical period. Finally, we present an outline of brain development from conception to three, linking developmental events to the cognitive and behavioral changes associated with them.

An Overview of Brain Anatomy

The easiest way to get to know the brain is to learn the main structures of the adult brain and how they relate to its function (Figure 1). It should be kept in mind that the relationship between brain structure and function is never simple. Although we often hear claims about the "language area" or "emotion center" of the brain, statements like these are simplifications; in reality, even the simplest mental activities involve multiple brain regions.

The brain can be divided into three major parts. The brain stem, shaped like a widening stalk, connects the spinal cord to the upper brain. It controls reflexes and involuntary processes like breathing and heart rate. Behind the brain stem and below the upper brain is the cerebellum, which is involved in balance and coordination.

The cerebrum, the largest part of the brain, sits above the brain stem and cerebellum. While each of the brain's structures plays an essential role, the cerebrum is the area most involved in higher processes like memory and learning. The cerebrum's outer surface is called the cerebral cortex. Although less than one-fourth of an inch thick (in adulthood), it is where the brain's most advanced activities – such as planning and decision-making – take place.

The folds of the cerebral cortex, which give the brain its wrinkled appearance, are an important feature of the brain's structure. Appearing during prenatal development, these folds increase the surface area of the cerebral cortex and allow more of it to be "packed" inside the skull. The resulting ridges and grooves form a pattern that is essentially the same from person to person. The ridges are called gyri (singular=gyrus); the grooves are called sulci (singular=sulcus).

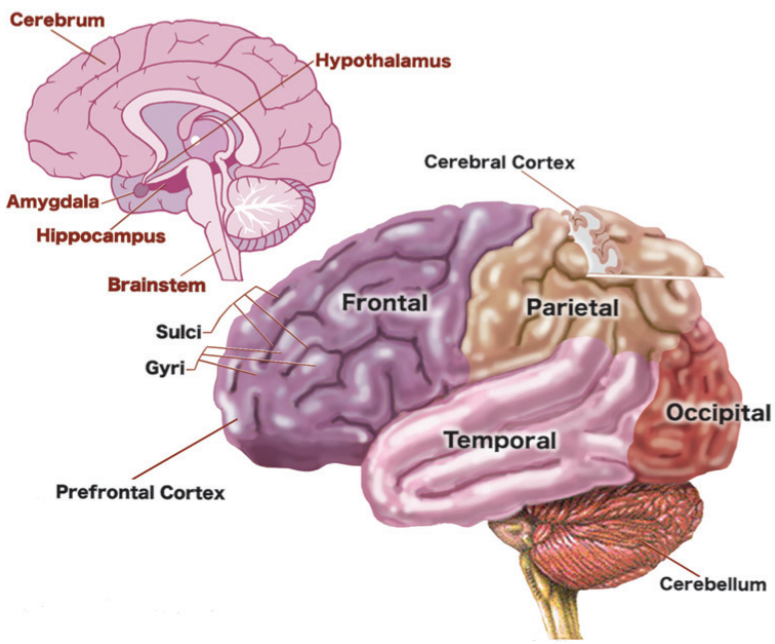

FIGURE 1:
The Human Brain

Source:
Adapted from Educarer.org, 2006.

Scientists use gyri and sulci to divide the cerebral cortex into smaller units called lobes. Each hemisphere has four lobes. The occipital lobes, at the back of the brain, control vision. The parietal lobes are associated with bodily sensations like heat, cold, pressure, and pain. The temporal lobes are involved with hearing, language skills, and social understanding, including perception of other people's eyes and faces. The frontal lobes are associated with memory, abstract thinking, planning, and impulse control. The forward-most section of the frontal lobes is a distinct area referred to as the prefrontal cortex. This is the last brain area to mature, undergoing important developmental changes as late as adolescence. The prefrontal cortex is the location of our most advanced cognitive functions, including attention, motivation, and goal-directed behavior.[2-4]

Although our advanced cognitive abilities are dependent on the cerebral cortex, it is not the only part of the brain relevant to child development. The limbic system, located in the inner brain beneath the cortex, is a collection of small structures involved in more instinctive behaviors like emotional reactions, stress responses, and reward-seeking behaviors. The hippocampus is involved in memory formation and spatial learning. The hypothalamus is the control center for one of the body's key stress systems, regulating the release of cortisol and other stress hormones. The amygdala evaluates threats and triggers the body's stress response.[2,5,6]

Neurons and synapses form the wiring of the brain.

The brain processes information by forming networks of specialized nerve cells, called neurons, which communicate with one another using electrical and chemical signals (Figure 2). These messages are the physical basis of learning and memory.[7] A neuron consists of a cell body and the branch-like structures that extend from it. These include multiple dendrites and an axon, which may have numerous axon terminals. The cell body is the neuron's control center; among other duties, it stores DNA and generates energy used by the cell. The dendrites receive incoming signals from other neurons, and the axon and its terminal branches relay outgoing signals to other neurons. Axons are sometimes coated with myelin, a fatty substance that insulates the axon and increases the efficiency of communication.

Messages are passed between neurons at connections called synapses. The neurons do not actually touch, however. There is a microscopic gap – the synaptic cleft – between the axon terminal of one neuron and the dendrite of another. Communication between neurons involves complex electrical and chemical processes, but its basics can be outlined simply:

When a neuron (let's call it Neuron A) receives a chemical signal from another neuron, Neuron A becomes electrically charged in relation to the surrounding fluid outside its membrane. This charge travels down its axon, away from the cell body, until it reaches the axon's end. Waiting here inside the axon terminals are a group of storage sites, called vesicles, that contain chemicals manufactured and delivered by the cell body. When the electrical charge arrives at the axon terminal, it causes these vesicles to fuse with the terminal's cell membrane, spilling their contents out of the cell and into the synaptic cleft.

As Neuron A returns to its resting state, the molecules it spilled – called neurotransmitters – make their way across the synaptic cleft to Neuron B's dendrite. When they arrive, they bind with receptor sites in the dendrite's membrane. Each time a neurotransmitter molecule from Neuron A binds with a receptor on Neuron B, ions from the fluid surrounding the cells enter Neuron B through the unlocked receptor. As a result, Neuron B develops an electrical charge, the charge travels down its axon, and the process continues.[2]

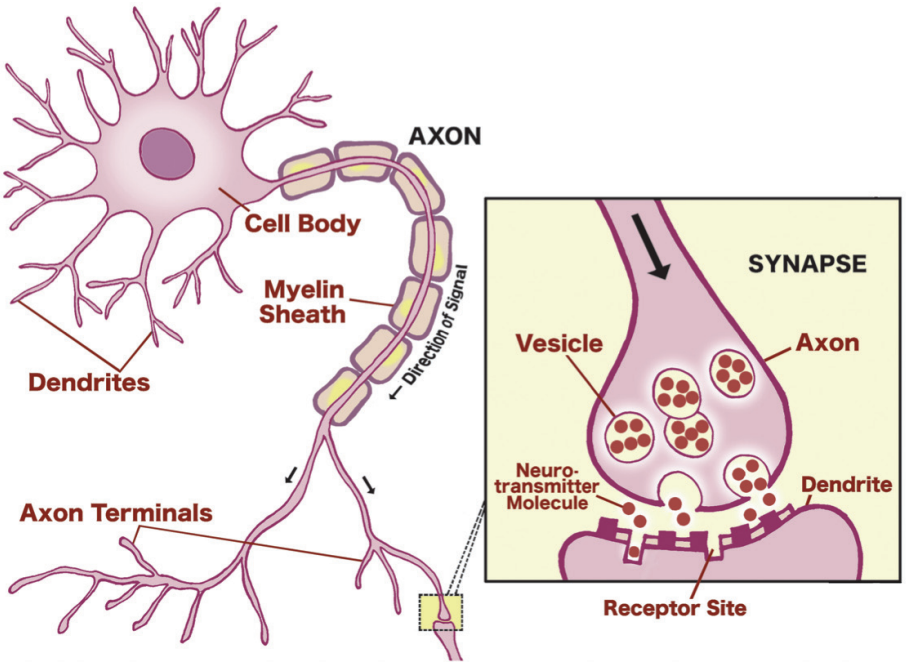

FIGURE 2: Communication Between Neurons

Source: Adapted from Educarer.org, 2006.

In the first three years, a child's brain has up to twice as many synapses as it will have in adulthood.

Now that we're a little more familiar with the fundamentals of the brain, let's take a look at brain development in children. Between conception and age three, a child's brain undergoes an impressive amount of change. At birth, it already has about all of the neurons it will ever have. It doubles in size in the first year, and by age three it has reached 80 percent of its adult volume.[8-10]

Even more importantly, synapses are formed at a faster rate during these years than at any other time. In fact, the brain creates many more of them than it needs: at age two or three, the brain has up to twice as many synapses as it will have in adulthood (Figure 3). These surplus connections are gradually eliminated throughout childhood and adolescence, a process sometimes referred to as blooming and pruning.[11]

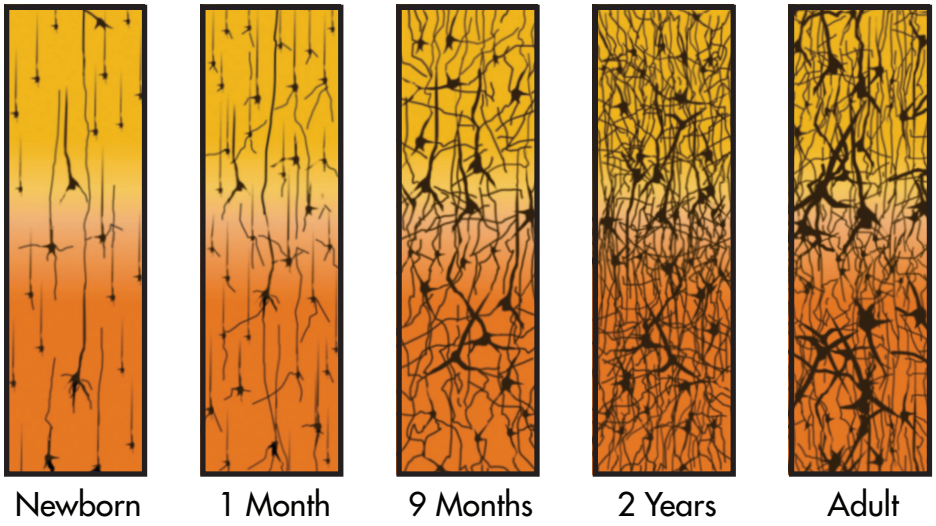

FIGURE 3:
Synapse Density Over Time

Source:
Corel, JL. The postnatal development of the human cerebral cortex. Cambridge, MA: Harvard University Press; 1975.

The organization of a child's brain is affected by early experiences.

Why would the brain create more synapses than it needs, only to discard the extras? The answer lies in the interplay of genetic and environmental factors in brain development.

The early stages of development are strongly affected by genetic factors; for example, genes direct newly formed neurons to their correct locations in the brain and play a role in how they interact.[12,13] However, although they arrange the basic wiring of the brain, genes do not design the brain completely.[14,15]

Instead, genes allow the brain to fine-tune itself according to the input it receives from the environment. A child's senses report to the brain about her environment and experiences, and this input stimulates neural activity. Speech sounds, for example, stimulate activity in language-related brain regions. If the amount of input increases (if more speech is heard) synapses between neurons in that area will be activated more often.

Repeated use strengthens a synapse. Synapses that are rarely used remain weak and are more likely to be eliminated in the pruning process. Synapse strength contributes to the connectivity and efficiency of the networks that support learning, memory, and other cognitive abilities.[16,17] Therefore, a child's experiences not only determine what information enters her brain, but also influence how her brain processes information.

Genes provide a blueprint for the brain, but a child's environment and experiences carry out the construction.

The excess of synapses produced by a child's brain in the first three years makes the brain especially responsive to external input. During this period, the brain can "capture" experience more efficiently than it will be able to later, when the pruning of synapses is underway.[11] The brain's ability to shape itself – called plasticity – lets humans adapt more readily and more quickly than we could if genes alone determined our wiring.[18] The process of blooming and pruning, far from being wasteful, is actually an efficient way for the brain to achieve optimal development.

From Conception to Age Three: An Outline of Early Brain Development

First Trimester

The development of the brain begins in the first few weeks after conception. Most of the structural features of the brain appear during the embryonic period (about the first 8 weeks after fertilization); these structures then continue to grow and develop during the fetal period (the remainder of gestation).[19,20]

The first key event of brain development is the formation of the neural tube. About two weeks after conception, the neural plate, a layer of specialized cells in the embryo, begins to slowly fold over onto itself, eventually forming a tube-shaped structure. The tube gradually closes as the edges of the plate fuse together; this process is usually complete by four weeks after conception. The neural tube continues to change, eventually becoming the brain and spinal cord.[20,21]

About seven weeks after conception the first neurons and synapses begin to develop in the spinal cord. These early neural connections allow the fetus to make its first movements, which can be detected by ultrasound and MRI even though in most cases the mother cannot feel them. These movements, in turn, provide the brain with sensory input that spurs on its development. More coordinated movements develop over the next several weeks.[22]

Second Trimester

Early in the second trimester, gyri and sulci begin to appear on the brain's surface; by the end of this trimester, this process is almost complete. The cerebral cortex is growing in thickness and complexity and synapse formation in this area is beginning.[20,21,23]

Myelin begins to appear on the axons of some neurons during the second trimester. This process – called myelination – continues through adolescence. Myelination allows for faster processing of information: for the brain to achieve the same level of efficiency without myelination, the spinal cord would have to be three yards in diameter.[14]

Third Trimester

The early weeks of the third trimester are a transitional period during which the cerebral cortex begins to assume many duties formerly carried out by the more primitive brainstem.

For example, reflexes such as fetal breathing and responses to external stimuli become more regular. The cerebral cortex also supports early learning which develops around this time.[24,25]

Year One

The remarkable abilities of newborn babies highlight the extent of prenatal brain development. Newborns can recognize human faces, which they prefer over other objects, and can even discriminate between happy and sad expressions. At birth, a baby knows her mother's voice and may be able to recognize the sounds of stories her mother read to her while she was still in the womb.[26,27]

The brain continues to develop at an amazing rate throughout the first year. The cerebellum triples in size, which appears to be related to the rapid development of motor skills that occurs during this period. As the visual areas of the cortex grow, the infant's initially dim and limited sight develops into full binocular vision.[28,29]

At about three months, an infant's power of recognition improves dramatically; this coincides with significant growth in the hippocampus, the limbic structure related to recognition memory. Language circuits in the frontal and temporal lobes become consolidated in the first year, influenced strongly by the language an infant hears. For the first few months, a baby in an English-speaking home can distinguish between the sounds of a foreign language. She loses this ability by the end of her first year: the language she hears at home has wired her brain for English.[30,31]

Year Two

This year's most dramatic changes involve the brain's language areas, which are developing more synapses and becoming more interconnected. These changes correspond to the sudden spike in children's language abilities – sometimes called the vocabulary explosion – that typically occurs during this period. Often a child's vocabulary will quadruple between his first and second birthday.

During the second year, there is a major increase in the rate of myelination, which helps the brain perform more complex tasks. Higher-order cognitive abilities like self-awareness are developing: an infant is now more aware of his own emotions and intentions. When he sees his reflection in a mirror, he now fully recognizes that it is his own. Soon he will begin using his own name as well as personal pronouns like "I" and "me."[14,28]

Year Three

Synaptic density in the prefrontal cortex probably reaches its peak during the third year, up to 200 percent of its adult level. This region also continues to create and strengthen networks with other areas. As a result, complex cognitive abilities are being improved and consolidated. At this stage, for example, children are better able to use the past to interpret present events. They also have more cognitive flexibility and a better understanding of cause and effect.[14,32]

The earliest messages that the brain receives have an enormous impact.

Early brain development is the foundation of human adaptability and resilience, but these qualities come at a price. Because experiences have such a great potential to affect brain development, children are especially vulnerable to persistent negative influences during this period. On the other hand, these early years are a window of opportunity for parents, caregivers, and communities: positive early experiences have a huge effect on children's chances for achievement, success, and happiness.

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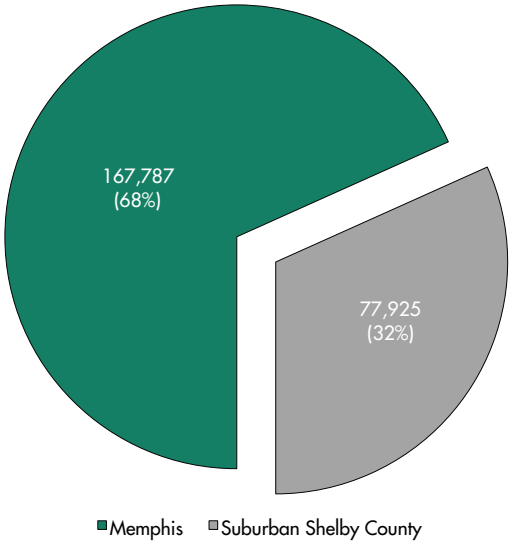
For our children, Memphis and suburban Shelby County are two different worlds.

Shelby County has nearly a quarter of a million children: more than one in four residents of Shelby County are less than 18 years old. About 70 percent of these children live in Memphis; the rest live in the outlying suburbs (Figure 1). On the whole, these two groups of children lead very different lives, with different opportunities for early experiences that promote healthy brain development.

Improving the well-being of all Shelby County's children requires an understanding of these patterns and their implications for community action. This chapter presents a brief overview of the child population of Shelby County, with an emphasis on how factors associated with child well-being often vary between Memphis and suburban Shelby County.

FIGURE 1:
Number & Percent of Children Living in Memphis & Suburban Shelby County, 2008

Source:
American Community Survey, 2008, B01001.

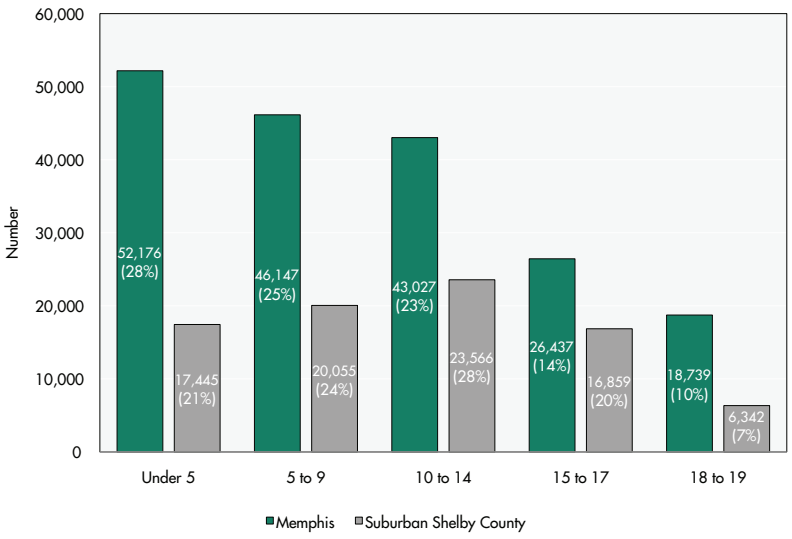


Children in Memphis, as a group, differ from suburban children in age, race, and family type.

Memphis has a higher proportion of young children than suburban Shelby County. Children under five are the largest age group of Memphis children, representing 28 percent of all residents under age 20. In suburban Shelby County, children from 10 to 14 are the largest group (Figure 2).

FIGURE 2:
Number & Percent of Children by Age, Memphis & Suburban Shelby County, 2008

Source:
American Community Survey, 2008, B01001.



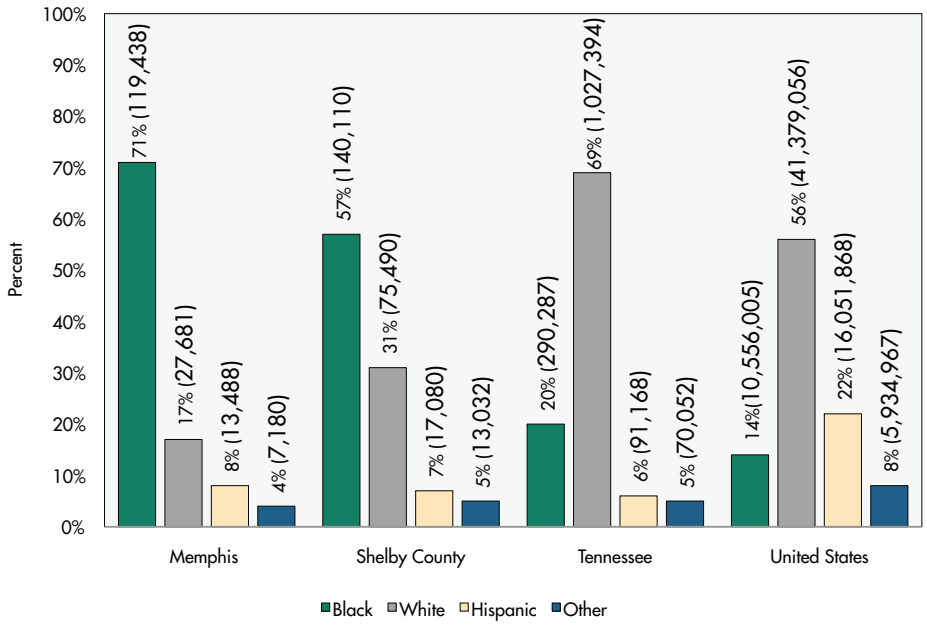


FIGURE 3:
Number & Percent of Children by Race in the Memphis, Shelby County, Tennessee & the United States, 2008

Source:
American Community Survey, 2008, C01001B,C,D,E,F,H&I.

A majority of children in Memphis (7 in 10) are black, compared to just over one in four in suburban Shelby County (not shown). The black-white ratio of Memphis is nearly opposite that of Tennessee and the U.S. The Hispanic population of Memphis is similar to that of the state (Figure 3).

Children in Memphis are more likely than suburban children to live in single parent families. Almost 60 percent of Memphis children live with an unmarried parent, compared to 23 percent in suburban Shelby County (Figure 4).

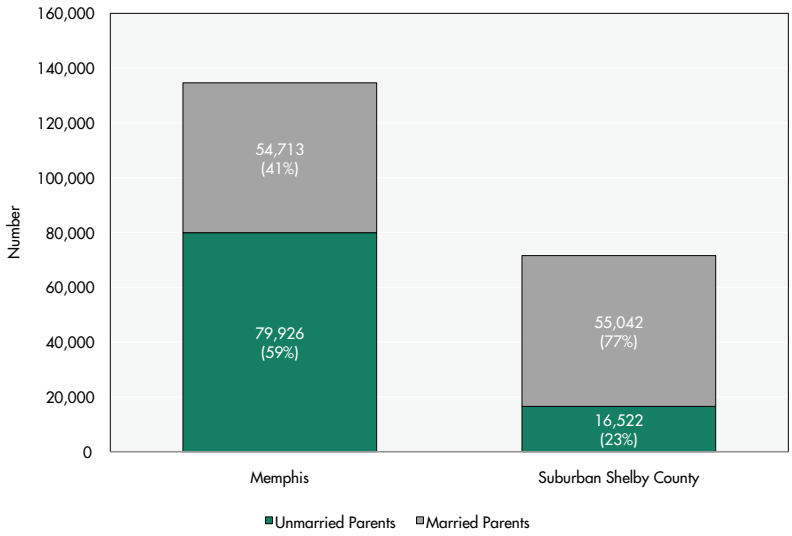


FIGURE 4:
Number & Percent of Children by Living Arrangement, Memphis & Suburban Shelby County, 2008

Source:
American Community Survey, 2008, C17006.

Shelby County families with children make less money than families without children.

Family income is a good measure of child well-being. Children whose families have higher incomes tend to do better in school and show better behavioral and social adjustment. A stable and adequate income allows parents to buy books and educational toys, involve children in cultural activities, and purchase better child care. Insufficient income, on the other hand, is a cause of stress and can lead to less parental warmth and responsiveness.[1,2]

In Memphis and Shelby County, families with children have lower incomes than families without children (Figure 5). The median annual income of families without children in Shelby County is nearly $12,000 more than that of families with children. In Memphis, families without children earn approximately $20,000 more per year than families with children.

FIGURE 5:
Median Family Income by Presence of Children, Memphis & Shelby County, 2008

Source:
American Community Survey, 2008, B19125.

Shelby County families pay a larger share of their incomes for rent than in previous years.

Housing is typically the biggest expense in a family's budget. 30 percent of family income is considered an appropriate portion to spend on housing, but poor and low-income families often pay more than 50 percent. Families with children may be particularly vulnerable to unaffordable housing: they earn less than other families, but need more. When less income is left over for discretionary spending, parents must make sacrifices that can reduce their children's quality of life. Too often, these choices include cutting back on necessities like food, clothes, and healthcare.[3,4]

Since 2000, more and more Shelby County families who rent are paying at least 35 percent of their incomes for housing (Figure 6). Of these families, almost two-thirds pay 50 percent or more (not shown).

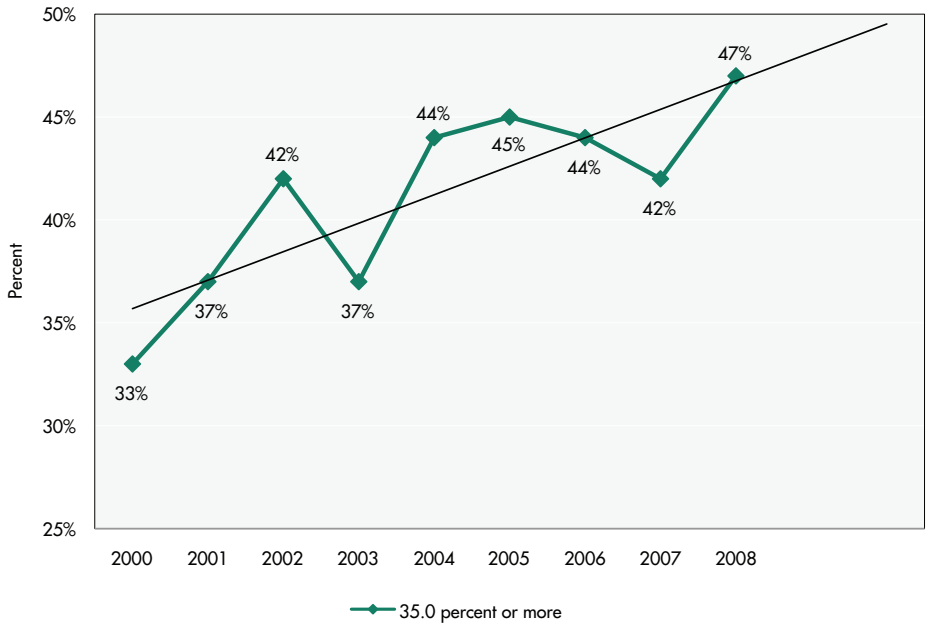


FIGURE 6:
Percent of Shelby County Residents Who Pay 35% or More of Gross Household Income for Rent, 2000-2008

Source:
American Community Survey, 2008, B25070.

The Memphis child poverty rate is double the national rate.

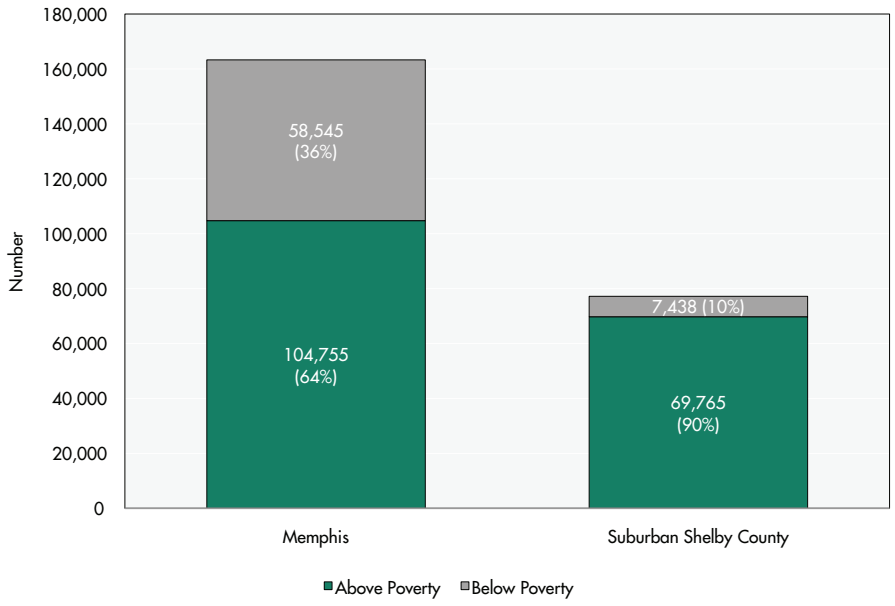
The terms "poor" and "in poverty" are applied to families with incomes below the Federal Poverty Level (FPL) set by the U.S. Department of Health and Human Services. The FPL in 2009 for a family of four is $22,050.

Poverty endangers children's healthy development. Poor families experience, on average, more turmoil, violence, and instability than other families. Compared to their better-off peers, poor children watch more TV, have fewer books, and are read to less frequently. Their daily lives are noisier, more crowded, and less safe. They are exposed to more toxins, attend lower-quality schools, and have poorer nutrition. As early as the first three years of life, poor children score lower on cognitive measures, and the effects of early poverty often persist into adulthood.[5-8]

- 28 percent of all children in Shelby County are in poverty, and almost 90 percent of them live in Memphis.
- In Memphis, 36 percent of children live in poverty (Figure 7), compared to 18 percent nationwide.
- Ten percent of children in suburban Shelby County live in poverty (Figure 7).

FIGURE 7:
Number & Percent of Children by Poverty Status, Memphis & Suburban Shelby County, 2008

Source:
American Community Survey, 2008, C17001.



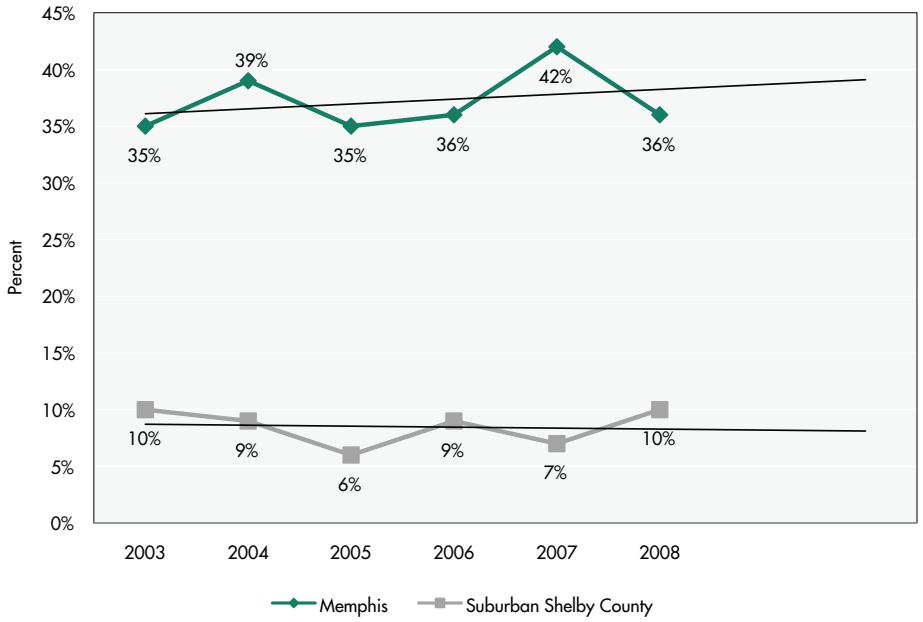


FIGURE 8:
Percent of Children in Poverty, Memphis & Suburban Shelby County, 2003-2008

Source:
American Community Survey, 2003-2008, C17001.

The percentage of children living in poverty has been relatively steady in Suburban Shelby County since 2003, with a slight increase in Memphis (Figure 8).

The Federal Poverty Level undercounts children living in economic distress.

The Federal Poverty Level (FPL) is widely considered an inadequate measure of economic hardship. The formula was developed in the early 1960s, when the relative costs of food, housing, health care, and other expenses were much different than today. Additionally, the formula is based solely on income; it does not recognize other forms of hardship such as being in debt or living in substandard housing.

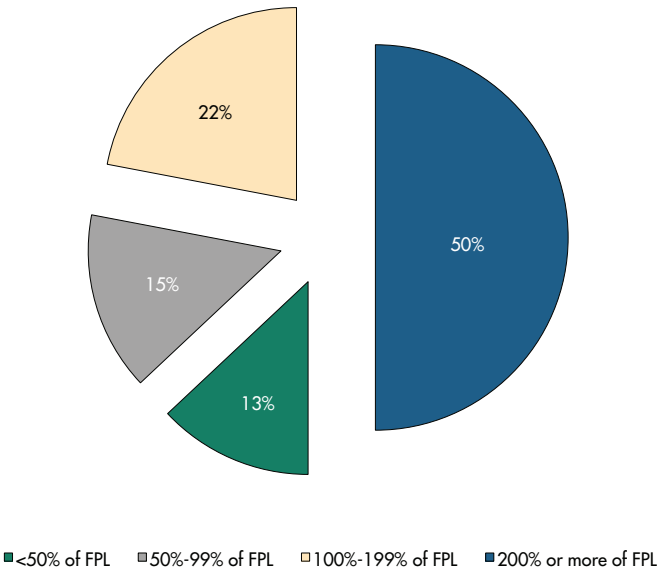
The limitations of the official poverty level have led researchers to distinguish two additional categories of hardship: low income and extreme poverty. Extensive research shows that it takes an income about twice the poverty line for a family to meet its basic needs.[8-11] Low-income families – families with incomes above FPL but below 200 percent of FPL – face many of the same difficulties that poor families face. Families living on incomes below half of the FPL are considered to be in extreme poverty.

Only half of Shelby County's children are economically secure.

- 28 percent of Shelby County children are poor.
- Of the 28 percent who are poor, almost half are in extreme poverty.
- Nearly a quarter of children in Shelby County live in low-income families.
- Half of Shelby County's children are economically secure (at or above 200 percent FPL).

FIGURE 9:
Percent of Children by Living Standard, Shelby County, 2008

Source:
American Community Survey, 2008, C17024.



Poverty does not affect all types of families equally.

Where a child lives is not the only factor in how likely she is to live in poverty. Children in single-parent families, for example, are more likely than other children to be poor whether they live in Memphis or in suburban Shelby County. Poverty, low social support, and high levels of parental stress place these children at risk for behavioral problems and reduced cognitive outcomes.[12,13]

- In Memphis, 87 percent of children in poverty live with unmarried parents (Figure 10).
- Similarly, in suburban Shelby County, 73 percent of children in poverty live with unmarried parents (Figure 10).

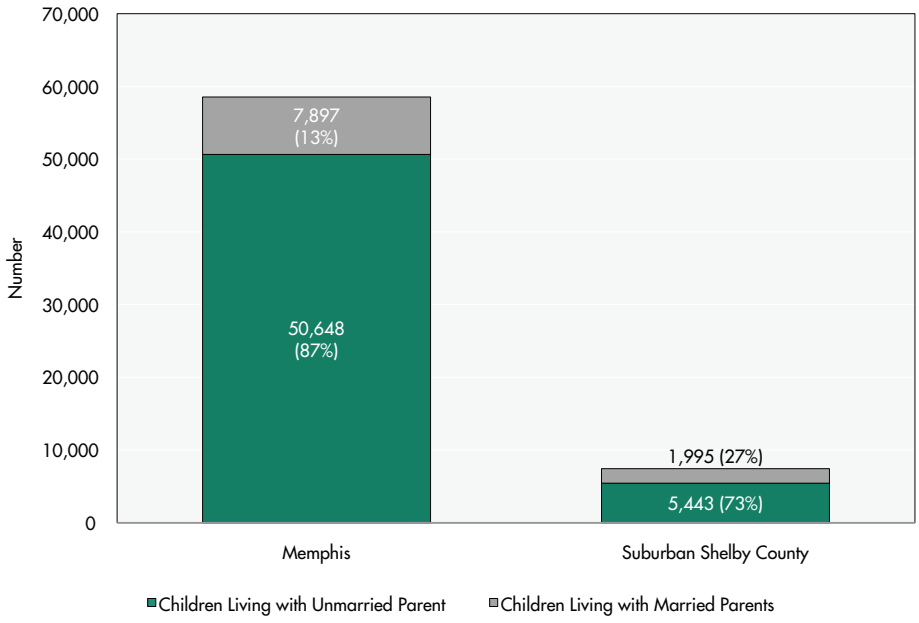


FIGURE 10:
Number & Percent of Children Living in Poverty by Living Arrangement, Memphis & Suburban Shelby County, 2008

Source:
American Community Survey, 2008, C17006.

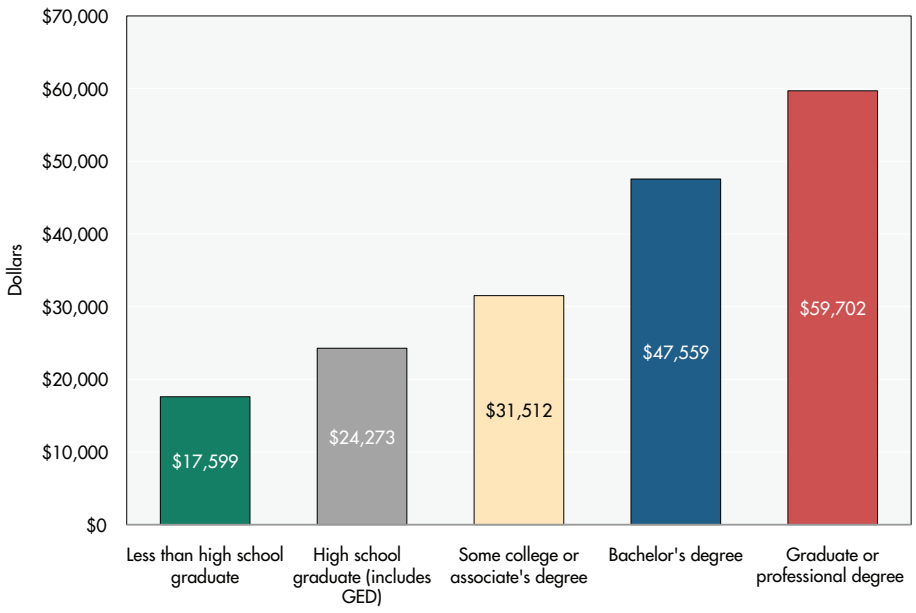
Kids fare better when their parents are educated.

Education helps parents earn more money, allowing them to improve their children's physical surroundings and purchase books and other stimulating materials. But income is only one way that children benefit from parental education. Better-educated parents tend to create home environments that promote their children's development. Compared to other parents, they use larger vocabularies, read to their children more often, and have higher expectations for them. Their children, in turn, are likely to have higher academic and behavioral outcomes.[14,15]

In Shelby County, increases in education translate into substantial gains in annual income (Figure 11). High school graduates earn 38 percent more than high school dropouts. Attending some college raises income another 30 percent, and graduating with a four-year degree means another 51 percent increase. A graduate or professional degree adds another 26 percent.

FIGURE 11: Median Annual Income by Educational Attainment, Shelby County, 2008

Source: American Community Survey, 2008, B20004.



Together, family income and parental education strongly influence a child's chances for success.

Researchers often combine measures of parental education, income, and occupation into a single variable: socioeconomic status (SES). SES is widely considered a better measure of a family's overall resources than is income or education alone.

The experiences that often accompany inadequate incomes and low levels of parental education have negative effects on brain development. The links between SES and children's health, cognitive development, academic achievement, and social adjustment are well documented.[1,16]

Recent research has discovered possible underlying mechanisms for these associations – specifically, differences in brain activity among low-SES children and higher-SES children. These differences are especially dramatic in the prefrontal cortex, the brain region associated with higher-level cognitive skills such as language, memory, and cognitive control.[17,18]

The majority of Shelby County households do not have children.

Only 35 percent of Shelby County households include children. This presents a unique set of problems for community efforts to build and sustain an effective public voice for children. For instance, child well-being may be a lower priority for adults without children or those whose children have already come of age.[19]

The differences between Memphis and the outlying suburbs may add to these difficulties. Suburban Shelby County has a higher percentage of families with children than Memphis (Figure 12). As described earlier, it also has proportionately fewer black children, children in poverty, and children in single-parent families. These demographic patterns place middle-class children on a separate track from disadvantaged children, and make it difficult to build a shared identity among parents.[20] The Urban Child Institute believes that promoting the optimal early development of all of our children is the best pathway to building the human and social capital that will define our community's future.

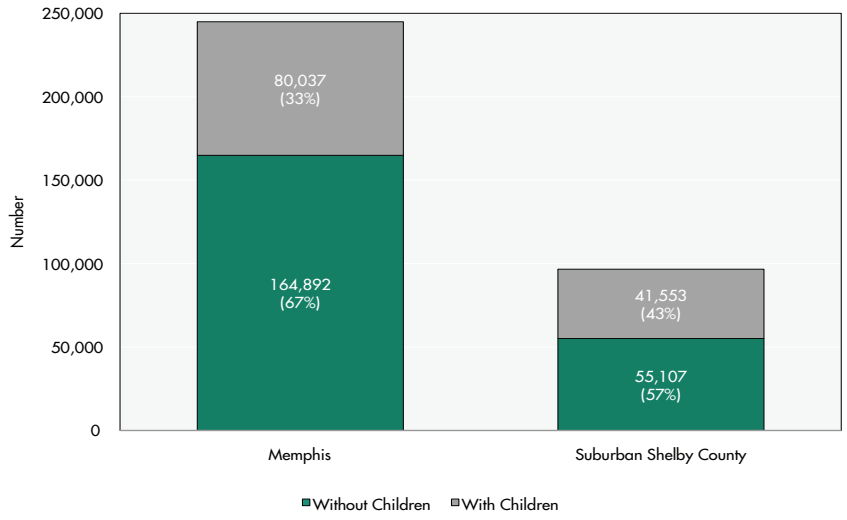


FIGURE 12:
Number & Percent of Households by Presence of Children, Shelby County, 2008

Source:
American Community Survey, 2008, C11005.

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The status of child health says a lot about the values of a community.

Even with the most supportive parents, the best child care, and the highest-quality schools, a child is unlikely to reach her potential if she suffers from poor health. Chronic health problems are costly for families and communities, and jeopardize children's chances for happiness, achievement, and success.

The level of child health in a community can be measured by a few commonly accepted markers, such as infant mortality rates (IMR) and other birth outcomes, or by taking a broader view and including other factors that influence children's well-being.

This section of the *Data Book* attempts to incorporate both approaches. First, we look at infant mortality and low birth weight in Shelby County, including comparisons with state and national trends. Next, we discuss other risk factors that are associated with diminished child outcomes and examine their prevalence in our community.

Shelby County performs poorly on most measures of child health.

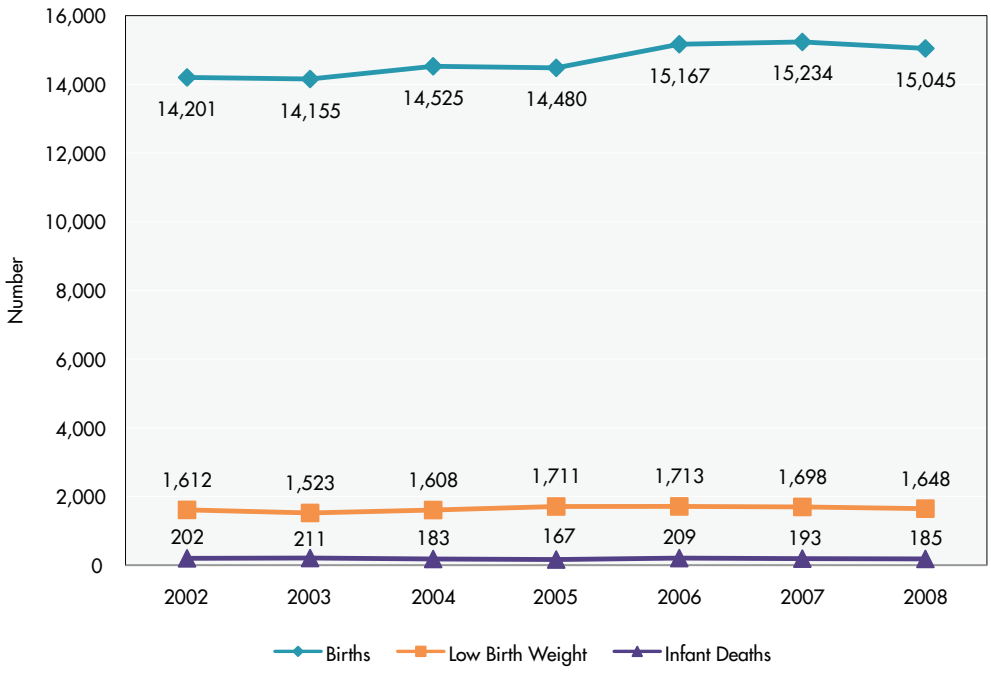
In the Annie E. Casey Foundation's *2009 Kids Count* report, which analyzes state-level information on children's educational, social, economic, and physical well-being, Tennessee ranks 46th of the 50 states, dropping from 42nd in the previous report. In many categories, Shelby County performs near the bottom of all Tennessee counties.[1]

Small numbers can indicate big problems.

At first glance, the number of infant deaths and low birth weight births may seem small. Out of about 15,000 babies born in Shelby County in 2008, around 1,600 were low birth weight (weighing less than 5 lbs. 8 oz.), and 185 died during infancy (Figure 1). However, when compared to national figures, the significance of the problem becomes apparent. The percent of low birth weight births in Shelby County is 25 percent higher than the national percentage. Infants in Shelby County are dying at almost twice the rate of children across the country.

FIGURE 1:
Number of Total Live Births, Low Birth Weight Births, & Infant Deaths, Shelby County, 2002-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008.



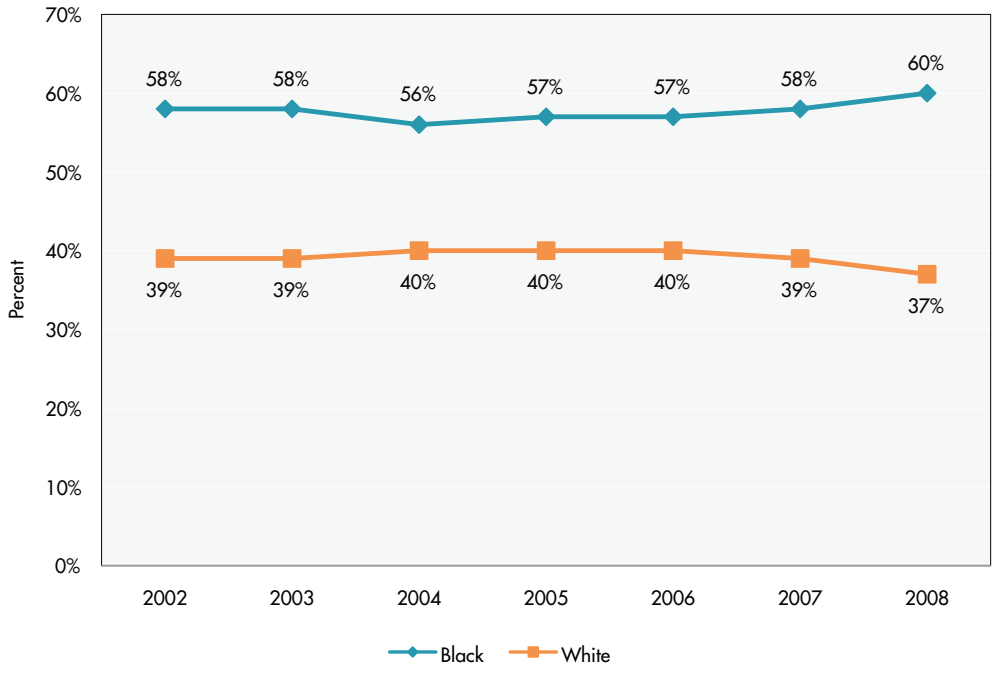


FIGURE 2:
Percent of Live Births by Race, Shelby County, 2002-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008.

Perhaps even worse, there are large differences in birth outcomes according to race and socioeconomic status. A black infant is three and a half times more likely than a white baby to die before her first birthday. This is of particular concern in Shelby County, where black infants represent 60 percent of births (Figure 2).

Differences in education, income, and health behaviors do not fully explain these persistent racial disparities: college-educated, non-smoking black women have a higher IMR than white women who smoke and drop out of high school.[2]

The infant mortality rate reflects a community's overall health.

The infant mortality rate (IMR) is the number of deaths that occur in the first 12 months of life per 1,000 live births. It is an indicator of access to care, quality of care, socioeconomic conditions, and public health.[3] As such, it reflects the commitment of a community to infants and young mothers. Although the U.S. spends more than other countries on health care, it has one of the highest IMRs among industrialized nations.[1]

About two-thirds of infant deaths occur in the first month of life.

- Infant deaths can be divided into neonatal (birth to 27 days) and post-neonatal (28 days to 1 year) deaths.
- For black infants, prematurity (less than 37 weeks gestation) and low birth-weight are the most common causes of neonatal death.[2]
- For white babies, congenital malformations are the most common cause.[2]
- Post-neonatal deaths are most frequently a result of Sudden Infant Death Syndrome (SIDS), congenital malformations, or accidents.[2]

The basis for the difference in mortality between black and white infants is unclear.

Even among full-term infants (born after at least 37 weeks of gestation) the IMR is 1.74 times higher for black babies than for white babies.[4]

- While prenatal care may lower the chances of infant death, access to prenatal care does not fully explain the black-white IMR gap. Even among mothers with comparable levels of prenatal care, the black IMR is almost double the white IMR.[4]
- Although poverty is associated with infant mortality, it accounts for only part of the black-white gap.[5,6]
- Higher levels of maternal education are also associated with lower infant mortality. However, among mothers with similar levels of education, the black IMR is still more than double the white IMR.[4]

In Shelby County, the gap between the black IMR and white IMR has grown.

- In 2007, the black IMR in Shelby County was triple the rate among white infants.
- In 2008, it was over three and a half times higher.
- Since 2000 the IMR for blacks in Shelby County has decreased by 3 percent, while the white IMR has dropped by 36 percent (Figure 3).

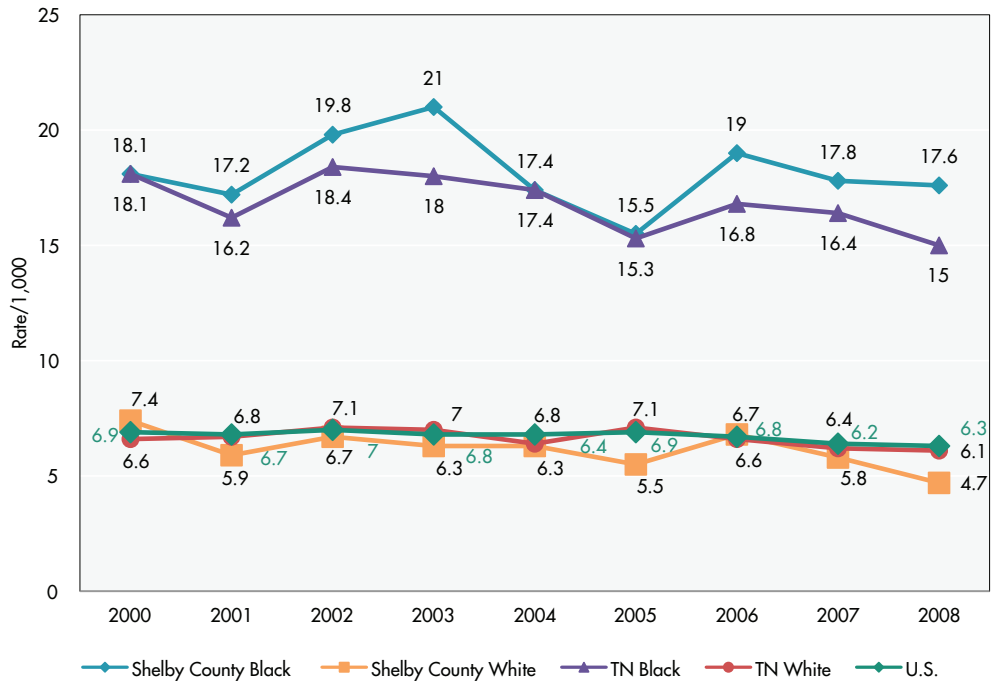


FIGURE 3:
Infant Mortality Rate per 1,000 Live Births by Race, Shelby County, Tennessee & United States, 2000-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008; Mathews TJ, MacDorman MF. Infant mortality statistics from 2006 period linked birth/infant death data set. National Vital Statistics Reports. 2010;58(17). CIA. Infant mortality Rate. World Factbook. 2008.

Low birth-weight babies have a greater risk of infant death.

Low birth weight is one of the most widely studied developmental outcomes in the research on pregnancy and birth. It is a common cause of infant mortality, and low birth-weight children who survive are vulnerable to a wide array of health complications and developmental problems.[7]

- In Tennessee, babies with normal birth-weight have an IMR of 3.3 per 1,000 live births.[4]
- Moderately low-birth-weight infants (3 lbs. 5 oz. to 5 lbs. 8 oz.) die at a rate 18 times higher.[4]
- Very low-birth-weight infants (less than 3 lbs. 5 oz.) have an IMR that is 77 times higher than that of normal birth-weight infants.[4]
- Low birth weight infants have increased risk of cerebral palsy, respiratory diseases, mental retardation, and vision and hearing impairments.[8]
- Children who were born at low birth weight are more likely than others to have diminished cognitive development and low educational attainment.[9]

Black infants are more likely than whites to be born at a low birth-weight.

- In both Tennessee and Shelby County, the rate of low birth-weight births has remained relatively constant in recent years (Figure 4).
- The black-white gap has remained about the same, with black infants more than twice as likely to be born at a low birth-weight (Figure 4).

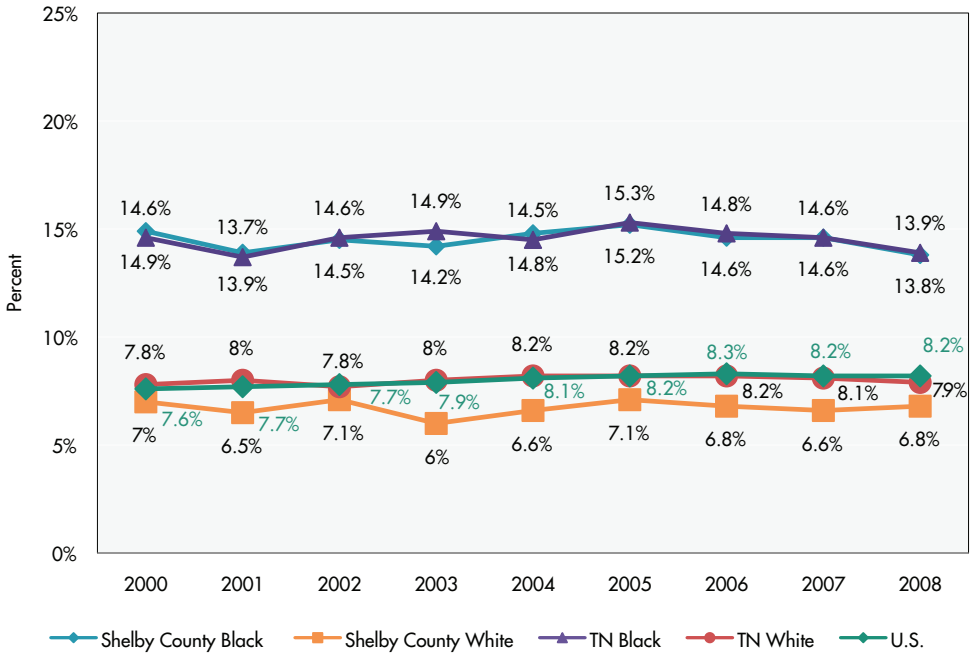


FIGURE 4:
Percent of Low Birth Weight Babies by Race, Shelby County, Tennessee, & United States, 2000-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008; Hamilton BE, Martin JA, Ventura SJ. Birth: Preliminary data for 2008. National Vital Statistics Reports, 2010; 58(16).

Teenage birth rates are on the rise.

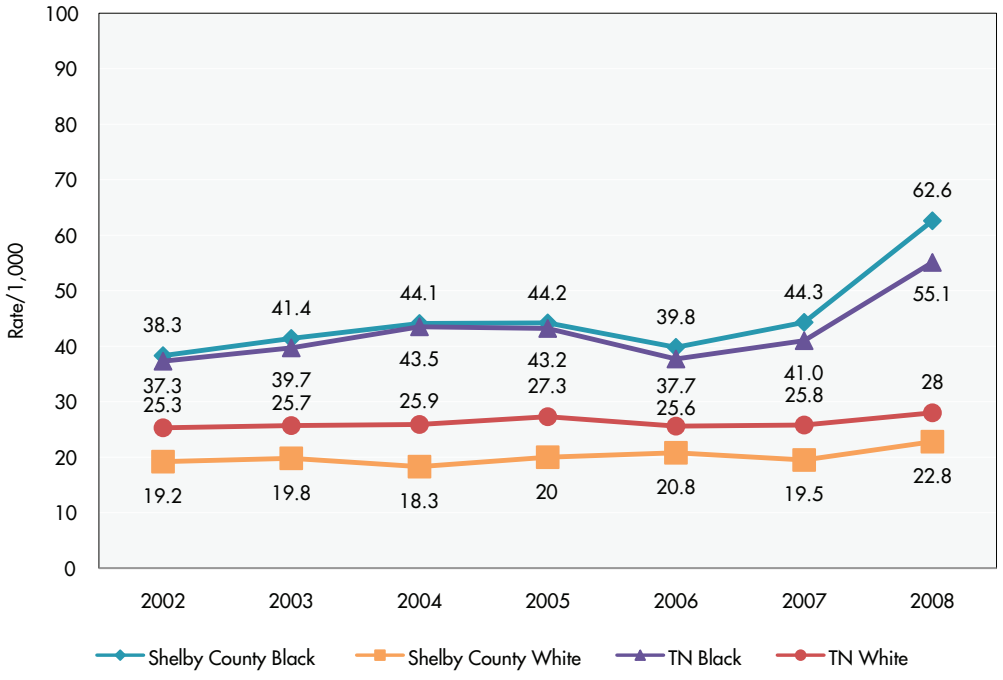
Children of teen mothers face numerous risks throughout life. Young mothers are more likely than older mothers to have low education, receive public assistance, use ineffective parenting strategies, and provide inconsistent care for their babies.[10] Children of teenage mothers are more likely than their peers to live in poverty and to have poor health.[10] As adults, they are more likely to engage in antisocial behavior, face unemployment, and become young parents themselves.[10]

- Compared to mothers in their 20s or early 30s, teen mothers are more likely to have a premature or low birth weight baby.[11]
- Mothers under 20 years old have higher rates of infant mortality than women who give birth in their 20s or early 30s.[11]
- For babies born to mothers under 15, the IMR is more than twice the overall rate.[11]

Of the 15,000 births in Shelby County, about 15 percent are to teenage mothers. In recent years, teen birth rates (births per 1,000 women under 20 years old) have risen in Shelby County and across Tennessee. The Shelby County white rate rose 19 percent between 2002 and 2008. The black rate rose 63 percent (Figure 5).

FIGURE 5:
Birth Rate per 1,000 Females Age 10 to 19 Years by Race, Shelby County & Tennessee, 2002-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008.
American Community Survey, 2002-2008,B01001A and B01001B.



Births to unmarried mothers continue to increase.

As a group, children of single mothers do not fare as well as other children. Marital status is influenced by social, personal, and economic resources, making it difficult to isolate the effects of single parenthood. In many studies, the effect of family structure decreases after other factors like income, low birth weight, and maternal traits are taken into account.[12] Nevertheless, being born to an unmarried mother remains an important risk factor for children's health and development.

- Starting with conception, children of single parents face more health risks than other babies. These include maternal prenatal smoking, maternal substance abuse, low birth weight, and poverty.[13]
- Research shows that they are also more likely to have academic, emotional, and behavior problems.[12]
- In Tennessee, consistent with national trends, infants born to unmarried mothers have an IMR that is twice that of infants born to married mothers.[11]

Since 2002, the percentage of births to unmarried mothers has increased in Shelby County (22%) and across Tennessee (14%) (Figure 6).

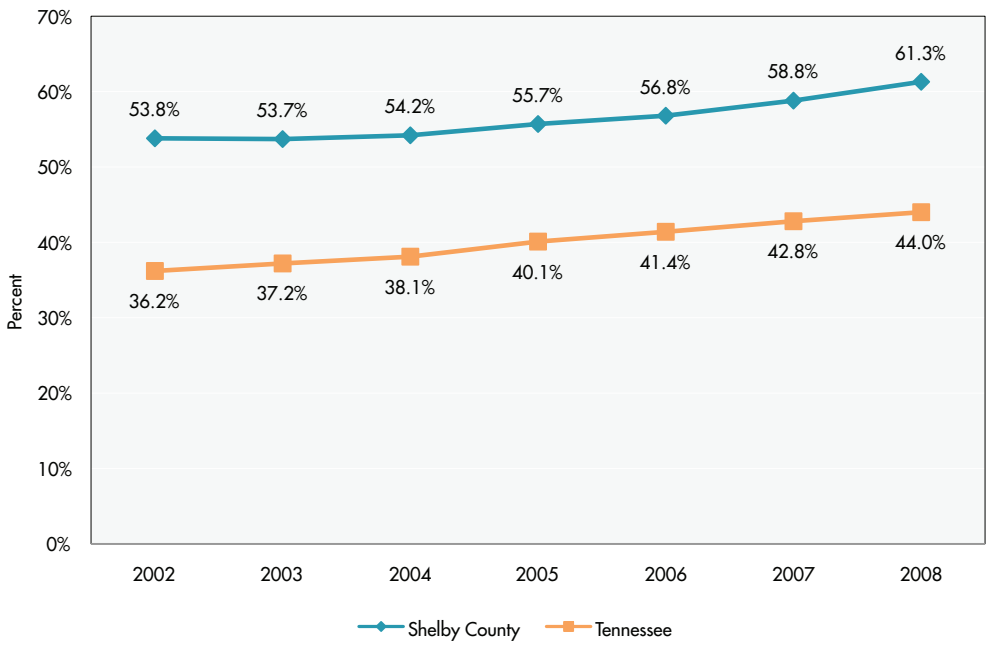
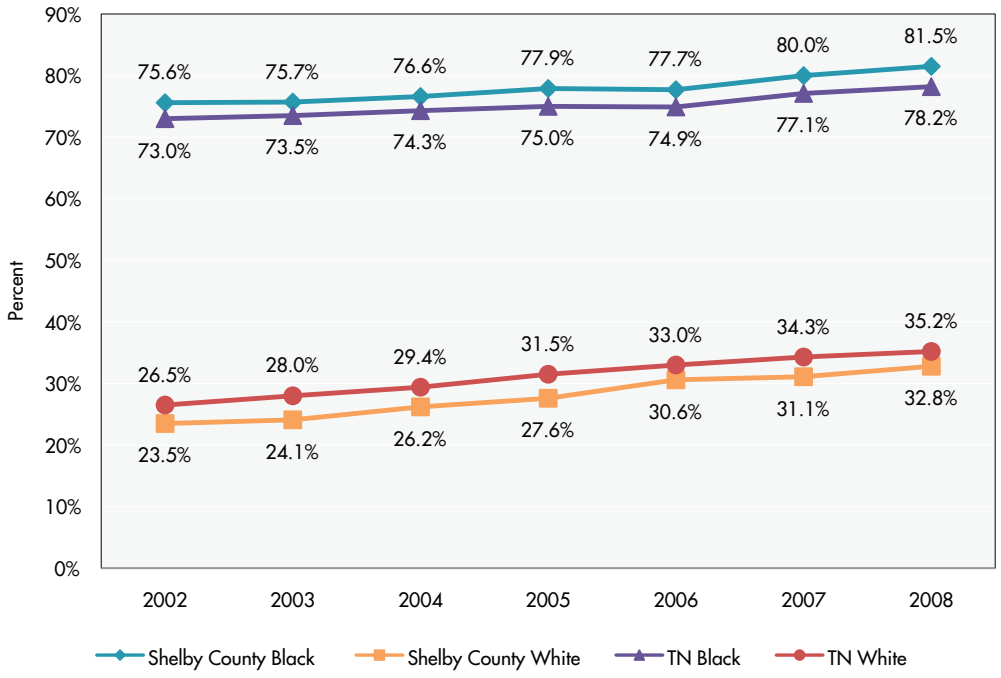


FIGURE 6:
Percent of Births to Unmarried Parents, Shelby County & Tennessee, 2002-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008.

FIGURE 7:
Percent of Births to Unmarried Mothers by Race, Shelby County & Tennessee, 2002-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008.



In Shelby County, unmarried births are increasing at a faster rate for white women than for black women. The percent of births to unmarried white mothers rose almost 40 percent between 2002 and 2008. Among black mothers the increase was nearly eight percent. A similar pattern is seen statewide (Figure 7).

Smoking during pregnancy endangers a baby's health.

- Maternal smoking during pregnancy is strongly associated with low birth-weight, congenital defects, and respiratory disease.[14]
- Even when it does not result in low birth weight, prenatal smoking can have negative effects on brain development.[15]
- In Tennessee and nationally, babies born to mothers who smoke during pregnancy have an IMR that is 74 percent higher than that of babies born to non-smoking mothers.[11]
- Smoking is also associated with long-term consequences such as behavioral problems in childhood.[16]

Prenatal smoking is less prevalent in Shelby County than in Tennessee as a whole. Moreover, the percentage of women who smoke during pregnancy has decreased slightly in Shelby County, while across the state it has risen slightly (Figure 8).

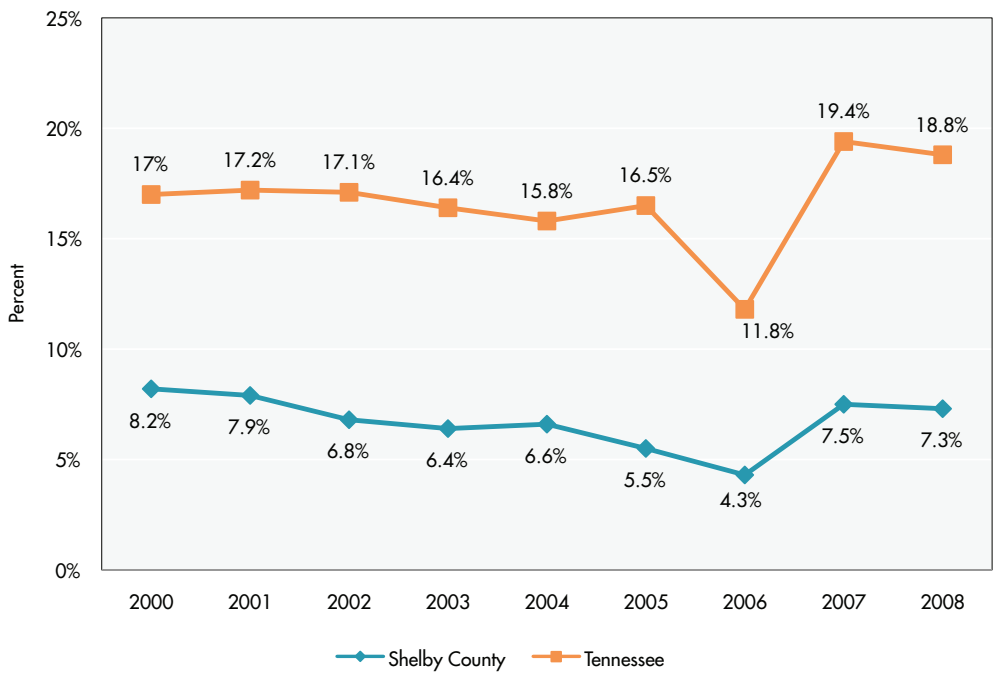


FIGURE 8:
Percent of Mothers Who Reported Smoking During Pregnancy, Shelby County & Tennessee, 2000-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2000-2008.

Prenatal care improves maternal and child health.

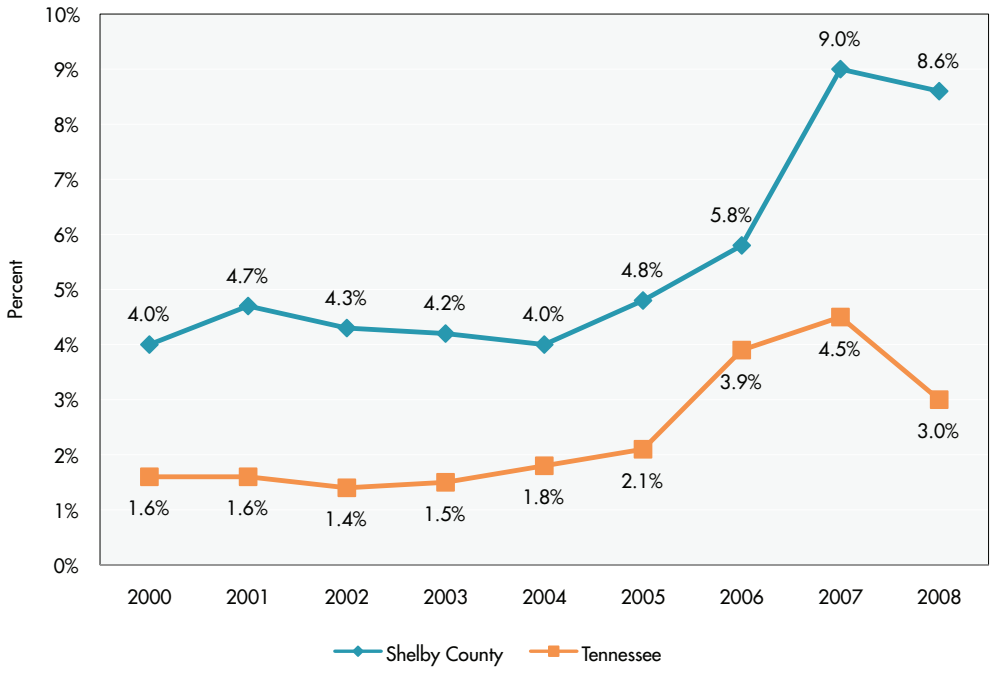
There have been many efforts to improve birth outcomes; one example is the effort to extend early prenatal care to more women. Timely prenatal care improves the health of both the mother and the fetus, and may contribute to a reduction in infant mortality.[17] Prenatal care should begin in the first trimester. A full-term pregnancy usually involves 10 to 14 visits.[18]

The continuing decline in access to prenatal care in Shelby County is a disturbing trend. Fewer mothers are receiving adequate care, and more mothers are receiving none at all. Good prenatal care is essential for monitoring maternal and fetal health, providing mothers with necessary information, and identifying possible risks.

Since 2000, the percentage of women in Shelby County receiving no prenatal care during their pregnancy has more than doubled (Figure 9).

FIGURE 9:
Percent of Mothers Who Report Having No Prenatal Care, Shelby County & Tennessee, 2000-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2008.



Excessive weight gain during pregnancy is bad for mothers and their babies.

- A mother who shows excess weight gain during pregnancy, especially if she was already overweight, places the child at risk for obesity within the first few years of life.[19]
- Excess weight gain is also associated with labor and delivery complications, preterm birth, and infant mortality.[20]
- Too much weight gain during pregnancy can result in high infant birth weight, which is a risk factor for diabetes, cardiovascular disease, and obesity later in a child's life.[21]

The percentage of mothers who gained 50 pounds or more during pregnancy increased between 2000 and 2008. Both Shelby County and Tennessee saw an increase of 32 percent (Figure 10).

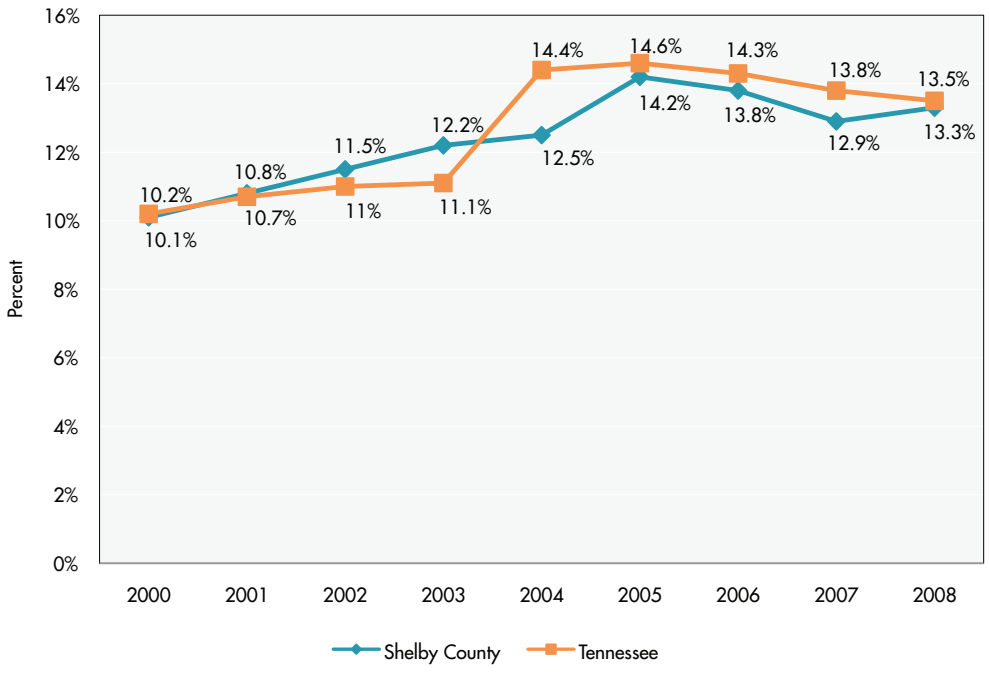


FIGURE 10:
Percent of Mothers Who Gained 50 lbs. or More During Pregnancy, Shelby County & Tennessee, 2000-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2000-2008.

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Breast milk is the best food for babies.

The first years of life are a period of rapid development, and good nutrition is essential. The American Academy of Pediatrics (AAP) and the American Dietetic Association champion breast milk as the food that best promotes a baby's health and development.[1,2]

- Breast milk provides the ideal combination of nutrients.
- The nutrients in breast milk are easy for babies to digest and absorb.
- As a baby grows, his mother's milk adjusts to meet his changing needs.

Breastfeeding has been linked to numerous health benefits. Research shows that breastfeeding helps protect babies from allergies, asthma, respiratory tract complications, gastroenteritis, Sudden Infant Death Syndrome, diabetes, heart problems and childhood cancer.[1,2]

The longer a baby is breastfed, the more likely he is to benefit. Small differences in duration can have significant implications. For instance, babies who breastfeed for 6 months are less susceptible to respiratory infections than are babies who breastfeed for four months.[3] Most of the well-documented health and cognitive benefits of breastfeeding are greater for babies who were breastfed for a longer time.[4,5]

Breastfeeding is a bonding experience.

Breastfeeding helps build a strong attachment between a mother and her baby. The touch and attention a baby receives during breastfeeding make him feel safe and secure. Mothers who breastfeed are less vulnerable to stress and postpartum depression, and therefore are more emotionally available for their infants.[6] A warm and responsive infant-mother relationship promotes a baby's social and emotional development.[7]

Breastfeeding supports healthy brain development.

Research shows that breastfeeding benefits children's cognitive and brain development. These benefits appear early and continue throughout childhood and adolescence. At seven days old, breastfeeding babies are more calm, alert, and responsive than bottle-feeding babies. At age five, children who were breastfed during the first month of life score higher than other children on measures of cognitive skills. Breastfeeding is also linked with academic performance in high school and likelihood of attending college.[8-10]

How well does Shelby County understand the importance of breastfeeding?

The results of the 2009 Early Childhood Development Public Opinion Poll indicate that awareness of the importance of breastfeeding is widespread in Shelby County. 80 percent of Shelby County residents are aware that breastfeeding is associated with improved intellectual development (Figure 1). 77 percent generally agree with the claim that breastfeeding is valuable to early brain development (Figure 2).

FIGURE 1:
What Percentage of Respondents Agree that "Some Research Has Shown That Breastfed Babies Are Smarter"

Source:
Early Childhood Development Public Opinion Poll, 2009.

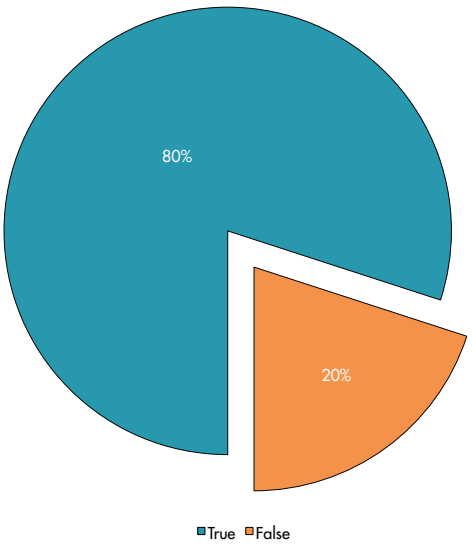
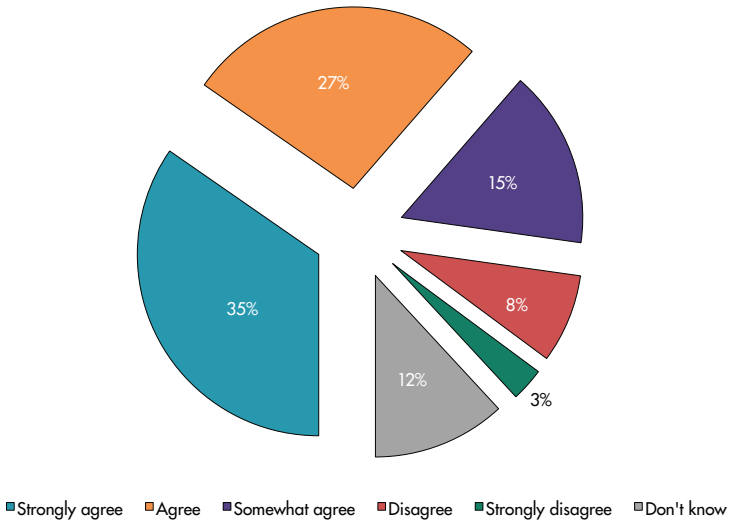


FIGURE 2:
What Percentage of Shelby Countians Believe that "Breastfeeding Is Important to a Child's Brain Development"

Source:
Early Childhood Development Public Opinion Poll, 2009.



Compared to state and national trends, a smaller share of Shelby County mothers plan to breastfeed.

Despite community awareness of the importance of breastfeeding, relatively few Shelby County children are breastfed. Nationally, the percentage of babies who are consistently breastfed falls short of the federal Healthy People 2010 goals set in 2000, and Shelby County rates are even lower.[11]

Women generally make decisions regarding breastfeeding before getting pregnant or in early pregnancy. These early intentions are a good predictor of whether she later initiates and continues breastfeeding. Women who plan to breastfeed cite reasons such as health benefits for their baby and the importance of the bonding experience. For women who intend to bottle-feed, common factors include plans to return to work and uncertainty about their ability to produce enough milk.[12]

Shelby County mothers are less likely to plan to breastfeed than mothers across Tennessee (Figure 3).

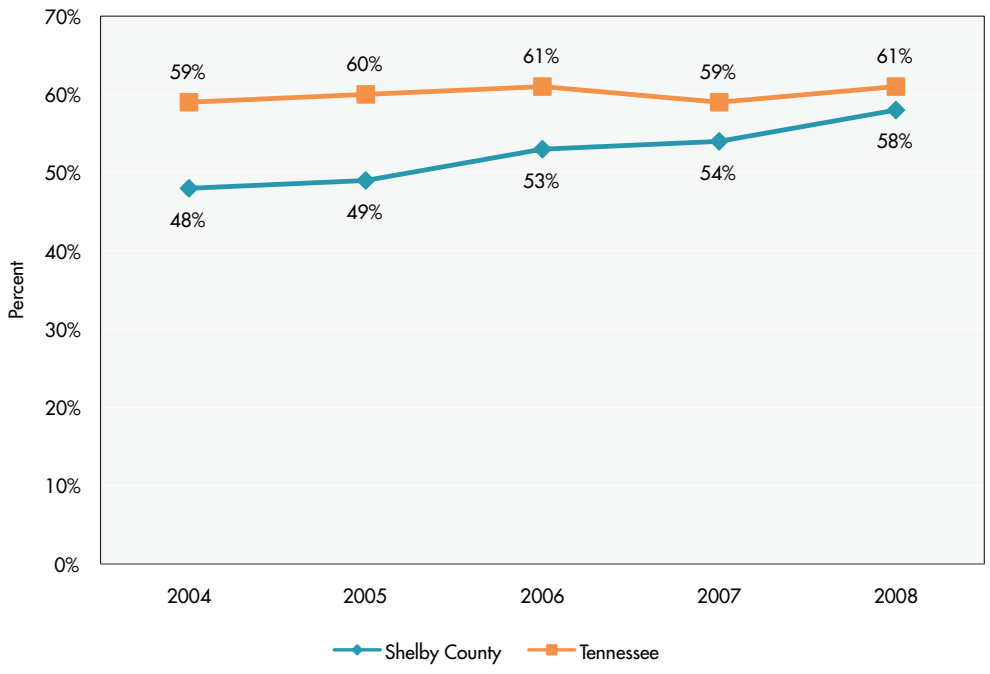


FIGURE 3:
Percent of Babies Whose Mothers Intend to Breastfeed at the Time of Birth, Shelby County & Tennessee, 2004-2008

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data 2004-2008.

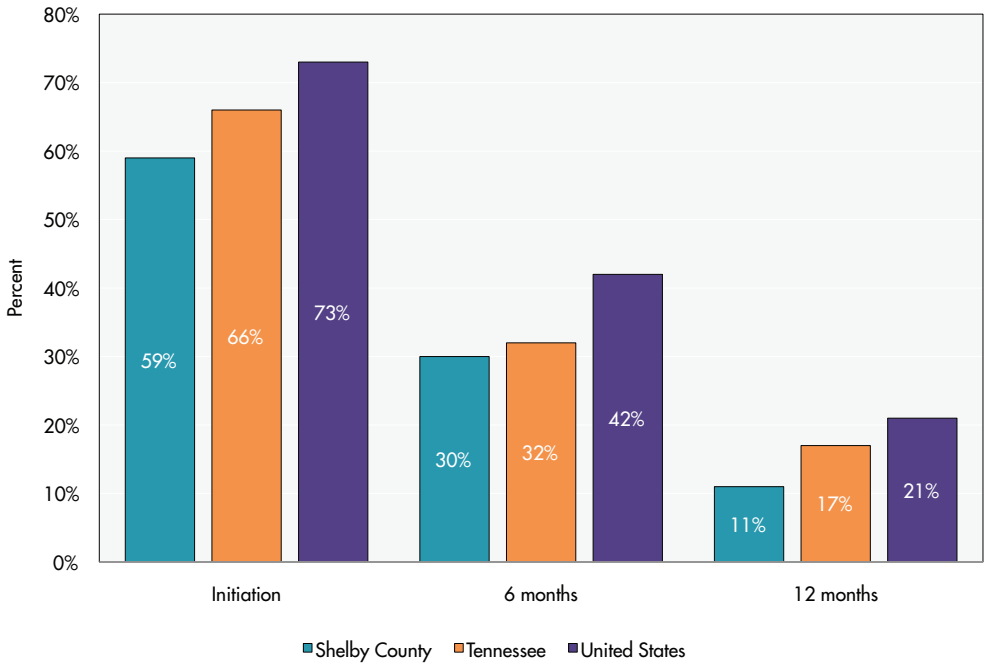
Shelby County mothers are less likely to start breastfeeding and continue through the first year.

Nationally, over 70 percent of babies have mothers who make an attempt at breastfeeding. However, these initial attempts often fail to lead to regular breastfeeding. By the time they are six months old, only 42 percent of babies are breastfed, whether exclusively or in combination with food or formula. By 12 months, only 21 percent receive any breast milk. Mothers stop breastfeeding for many reasons, the most common being the mother's perception that her milk supply is insufficient to satisfy her baby's hunger. Mothers who stop in the first few weeks often cite their baby's difficulty in latching on, while later in the first year physical discomfort and the baby's loss of interest are common factors.[11,13]

Shelby County lags behind Tennessee and the United States in the percentage of babies whose mothers initiate breastfeeding and in the duration of breastfeeding throughout the first year (Figure 4).

FIGURE 4:
Percent of Children Who Were Breastfed by Initiation & Duration, Shelby County, Tennessee, & United States, 2004

Source:
CDC National Immunization Survey, 2004.



Shelby County babies are less likely to breastfeed exclusively.

A healthy mother's milk contains all of the nutrients that her baby needs. The AAP recommends that healthy, full-term infants receive only breast milk for their first six months. Additional foods given during this period do not aid growth and may reduce the amount of breast milk a baby receives.[1] Research suggests that some of breast milk's health benefits may be lost if breastfeeding is not exclusive in the first few months.[5]

Around six months of age, a baby begins to need other foods, but breast milk still offers considerable benefits. Therefore the AAP recommends that breast milk remain a part of a baby's diet until at least his first birthday and preferably until age two or beyond.

Shelby County babies are slightly less likely to breastfeed exclusively than babies across Tennessee and the U.S. (Figure 5).

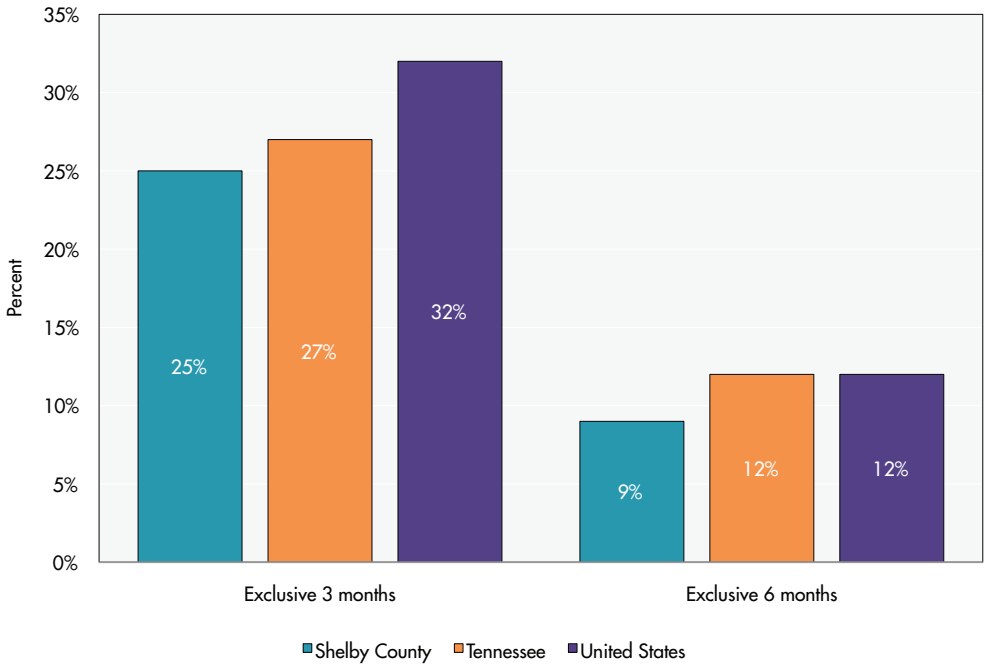


FIGURE 5:
Percent of Children Who Were Exclusively Breastfed by Duration, Shelby County, Tennessee, & United States, 2004

Source:
CDC National Immunization Survey, 2004.

Social perceptions affect breastfeeding behaviors.

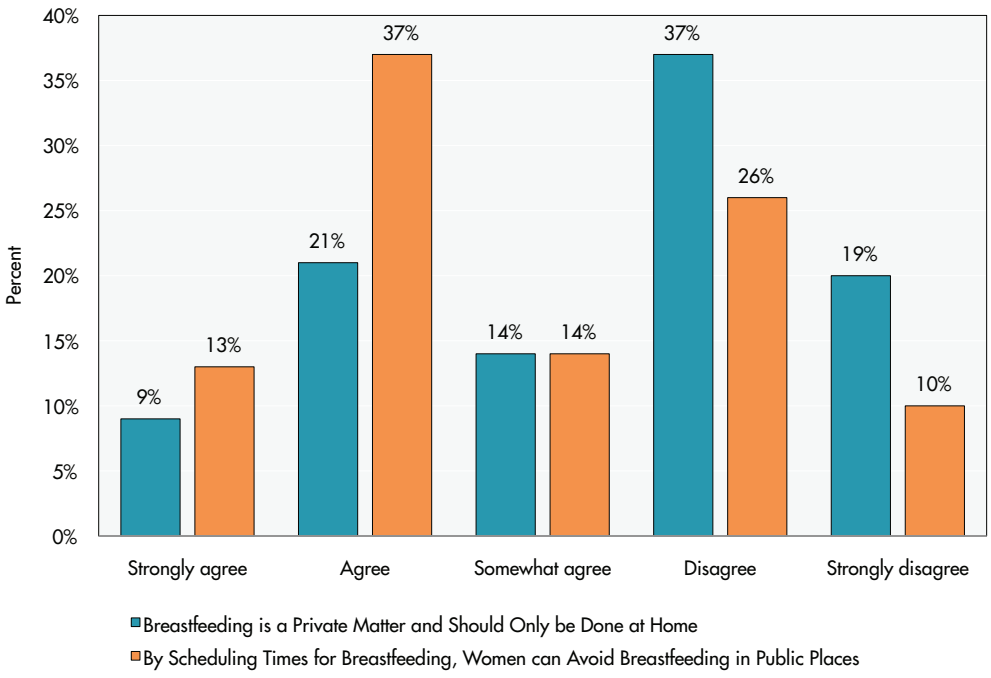
A new mother receives conflicting messages. She is told that breastfeeding is good for her and even better for her baby, yet there are many places where she feels unwelcome if she follows this advice. The act of breastfeeding involves a wide array of social values, and American attitudes toward breastfeeding are mixed. Despite public awareness of the benefits of breast milk, many Americans have negative opinions such as objecting to breastfeeding in public and disapproving of breastfeeding older infants. Social perceptions can affect mothers' decisions about initiating and continuing breastfeeding.[14,15]

Mothers need to be able to feed their infants on demand. A breastfeeding mother and her infant exchange subtle biological cues that help a mother's body work in harmony with her baby's changing needs. Efforts to adjust this natural schedule for the sake of convenience can interfere with successful breastfeeding. For example, if a mother delays feedings because she is uneasy about breastfeeding in public, her milk production may begin to decrease.[16]

Tennessee law protects a mother's right to breastfeed an infant under 12 months old in public.[17] Shelby County residents, however, are ambivalent about public breastfeeding. About 40 percent generally agree that breastfeeding should take place only at home. Over 60 percent believe that mothers can avoid the need to breastfeed in public by scheduling their baby's feedings (Figure 6).

FIGURE 6:
How Comfortable Are Shelby Countians With Breastfeeding in Public

Source:
Early Childhood Development Public Opinion Poll, 2009.



Maternal employment can discourage breastfeeding.

Returning to the workforce is one of the most common barriers to breastfeeding. Mothers who do so tend to stop breastfeeding sooner and are less likely to breastfeed exclusively for the recommended six months. About two-thirds of new mothers return to work by the time their children are six months old. Unless on-site child care or working from home is an option, direct breastfeeding at work is not possible, and working mothers tend to rely on expressing and storing milk for later use.[11,18]

Tennessee law requires employers to provide unpaid break time for a mother to express breast milk for her infant. Employers are also directed to make a reasonable effort to provide a private, convenient space for this activity. It appears unlikely, however, that these requirements are having optimal effect: Almost 80 percent Shelby County residents are unaware of them (Figure 7).

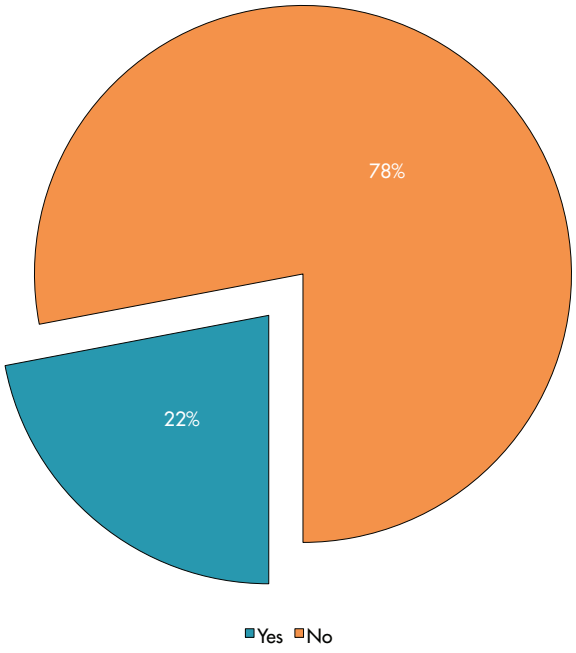


FIGURE 7:
Did you know that Tennessee has a Law so that Working Mothers may Breastfeed or Express Milk with a Pump in a Designated Private Area at the Worksite

Source:
Early Childhood Development Public Opinion Poll, 2009.

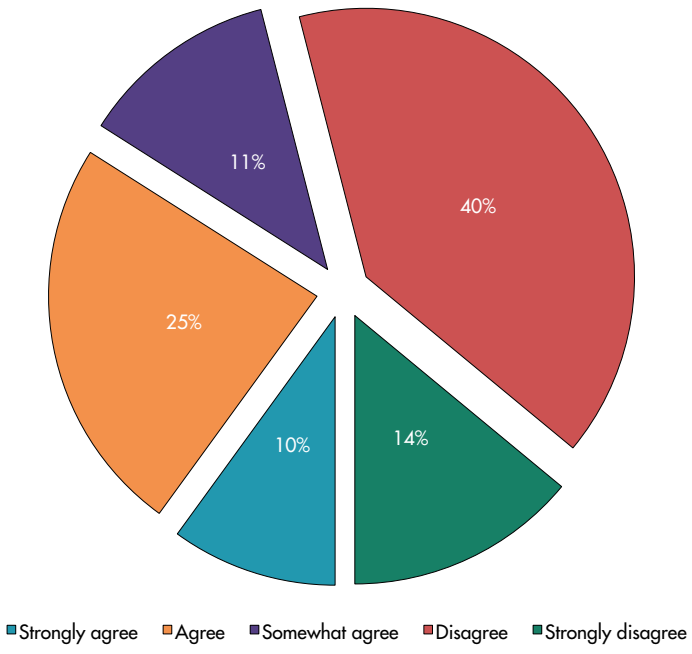
Shelby County residents are uncomfortable with mothers expressing milk at work.

As with other instances of public breastfeeding, social perceptions play a role in whether mothers feel comfortable breastfeeding or expressing milk at work. Acceptance by coworkers can encourage a mother's efforts to juggle work and family responsibilities, while disapproval can be a strong deterrent.

Almost half of Shelby County residents generally agree that mothers should not breastfeed or express milk at the workplace because of the intimacy of the act (Figure 8).

FIGURE 8:
How Respondents Reacted to the Statement, "Women Should not Breastfeed or Express Milk at Work Because It Is an Intimate Act"

Source:
Early Childhood Development Public Opinion Poll, 2009.



Improving maternal knowledge, workplace support, and public acceptance can increase breastfeeding rates.

Breastfeeding decisions are a private matter. However, these choices are affected by a lack of knowledge, public acceptance, and workplace support. Community efforts to increase these resources can improve breastfeeding rates in Shelby County. The legal protections already in place are a step in the right direction, but public attitudes indicate that more remains to be done.

Increasing mothers' knowledge is likely to ensure that more of them choose and stick with breastfeeding. Since breastfeeding intentions are often formed by the first trimester, women who are not yet pregnant or are in early prenatal care are an important audience for efforts to spread awareness of the advantages of breastfeeding.

Even after a woman chooses to breastfeed, accurate information can help her follow through with her decision. For example, many mothers stop breastfeeding because they believe they are not producing enough milk to satisfy their babies. In many cases, this is a misperception: the mother has inaccurate expectations or is having technical problems helping her baby get started. These issues can be easily resolved by guidance and assistance from a health care provider or lactation consultant.[11,13]

Workplace support is a critical component in increasing breastfeeding rates. The business community can help teach employers that breastfeeding means improved morale, increased productivity, reduced absenteeism and lower health care costs.[19] Shelby County mothers who return to work but want to provide their babies with the full benefits of breastfeeding should be able to depend on work environments that support their needs. Employers who provide private space, adequate refrigeration, flexible schedules, and social support for breastfeeding mothers should be acknowledged and rewarded.

Finally, public attitudes toward breastfeeding need to be changed. Mothers' decisions are affected by the opinions of their partners, relatives, and peers. The public needs to know more about the advantages that breastfeeding offers to children and to the community at large. Public awareness campaigns should frame breastfeeding as a public health issue and emphasize that increasing breastfeeding rates in our community will save money and lives.[20]

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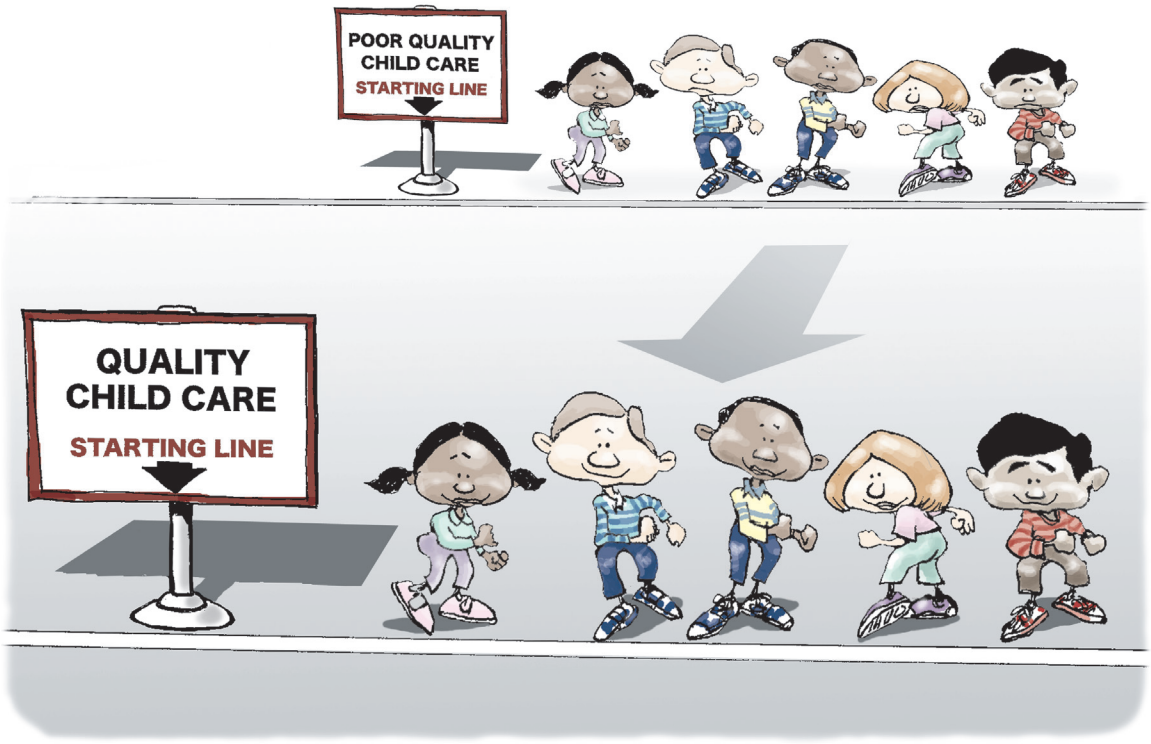


Early experiences affect a child's cognitive and brain development.

A child's earliest experiences strongly influence his later development. Ideally, children spend their earliest years in nurturing surroundings that promote optimal brain development and provide young children with a solid foundation on which their later skills and abilities will be built. Conversely, when children grow up in an environment characterized by toxic stress, chaos, and uncertainty, their ability to develop to their full potential is hindered.[1] As a result, children from economically and socially disadvantaged homes often reach kindergarten far behind their peers in the skills needed to succeed academically.

Beginning at birth, many of our community's youngest children are affected by economic factors, family circumstances, and health risks that are often associated with later difficulties in school.[2] Of the 14,000 babies born in Memphis in a typical year:

- more than 70 percent are from poor or low-income families.[3]
- 11 percent are born at low birth weight.[3]
- about 16 percent are born to a teenage mother.[3]
- more than 60 percent are born to an unmarried mother.[3]
- 30 percent are born to a mother who lacks a high school diploma.[3]

Children who are prepared to enter kindergarten are more likely to succeed throughout school.

Kindergarten readiness refers to a child's ability to participate successfully in the learning process when he reaches school. Children who are unprepared for kindergarten often have a difficult time catching up with their classmates: school readiness is strongly associated with later achievement.

Although children need a foundation of physical, social and emotional skills in order to make a smooth transition to formal schooling, cognitive skills such as reading and math are the best predictor of academic success.[4,5]

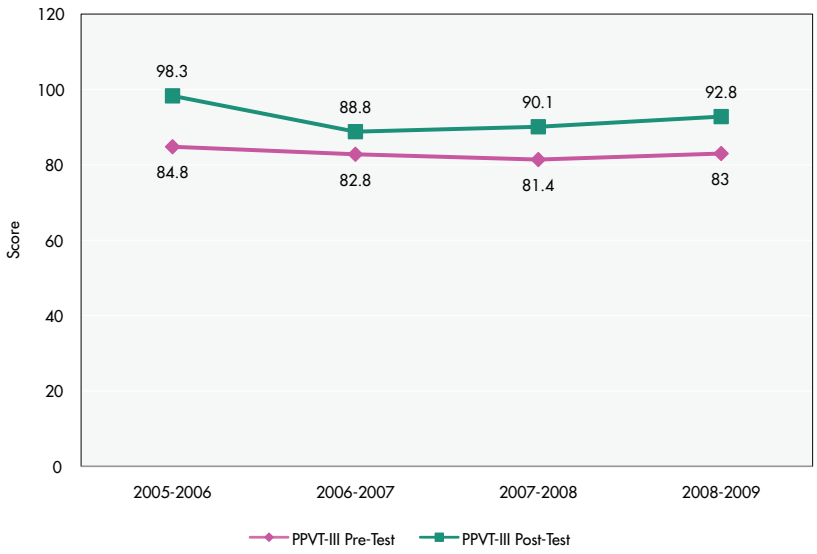


FIGURE 1:
Peabody Picture Vocabulary Test Scores Before & After MCS Pre-K, 2005-2009

Source:
Sell M. Memphis City Schools Pre-K program evaluation. Office of Evaluation.

Attending pre-kindergarten appears to improve children's cognitive skills.

Pre-kindergarten programs are typically funded and administered by public schools. Pre-kindergarten has a stronger educational focus than preschool and center-based care, and studies show that it provides greater developmental benefits to children than other types of care.[6]

Since 2005, Memphis City Schools (MCS) has collected information about its Voluntary Pre-K program that helps us see how pre-kindergarten participation influences children's cognitive and language development. The Peabody Picture Vocabulary Test (PPVT), an assessment of children's early language skills, is administered to children as they enter Pre-K and again as they complete the program. Comparing the results of the two assessments provides an indication of how enrollment in the program affects participants' skill levels.[7]

A score between 85 and 115 on the PPVT indicates average language development. As Figure 1 shows, average scores of entering students fall slightly below 85, indicating language skills that are just below the normal range for 4-year-olds.

On the second assessment, after a year of pre-kindergarten, children show a 6 to 13-point improvement: average scores are within the normal range (although still in its lower half).

As a group, children who complete a year of MCS Pre-K are more prepared for kindergarten than they were before. (Due to data limitations, we assume that the first and second assessment groups are made up of the same children, although it is probable that some children enter or exit the program during the school year.)

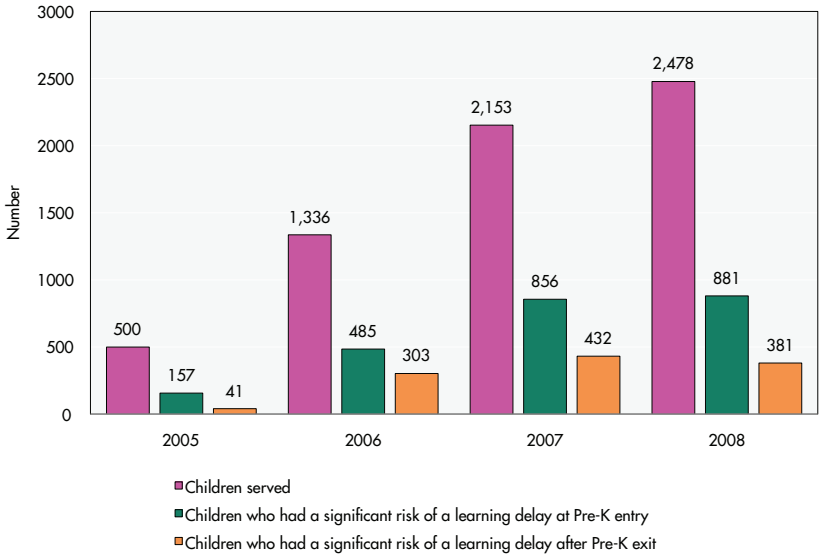
For many children, pre-kindergarten reduces the risk of learning delays.

Research shows that high-quality early learning programs are especially beneficial to children at risk. Compared to their peers, children from poor families, children of single parents, and children whose mothers lack a high school diploma tend to show bigger gains in reading and math, for example. These children tend to have fewer cognitively stimulating experiences at home, and high-quality learning programs appear to compensate to some degree. Early learning interventions improve at-risk children's language and cognitive abilities and increase their chances of completing high school and attending college.[6,8]

Many children entering MCS Pre-K are already well behind their classmates. 30 to 40 percent of incoming children have scores below 75 on the PPVT, indicating that they are at risk for learning delays. The evidence suggests that MCS Pre-K is an effective intervention for helping children with delayed language abilities gain the skills they need. After a year of Pre-K, about half of these children are no longer at risk (Figure 2).

FIGURE 2: Number of Children at Risk for Learning Delays Before & After MCS Pre-K, 2005-2008

Source: Sell M. Memphis City Schools Pre-K program evaluation. Office of Evaluation.



Which types of learning experiences best prepare children for kindergarten?

The Kindergarten Readiness Indicator (KRI), an assessment developed by Memphis City Schools, is administered to all children as they enter MCS kindergarten. The KRI tests a variety of language and number skills, including identification of rhyming sounds, ability to follow directions, and knowledge of colors and shapes.

Because MCS also collects information from parents about the type of care their children received in the year before kindergarten, we can use KRI results to compare the effects of different kinds of early learning experiences. Figure 3 displays average KRI verbal scores of children who come from similar backgrounds but experienced different types of care.

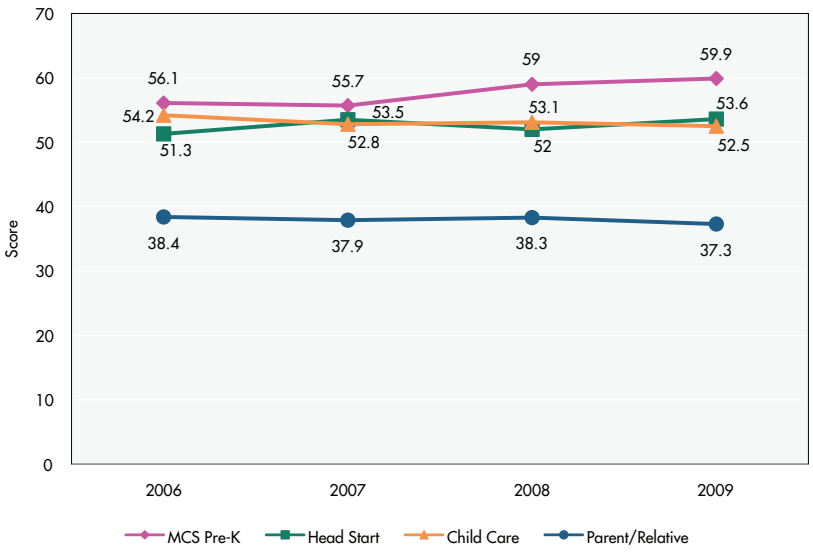


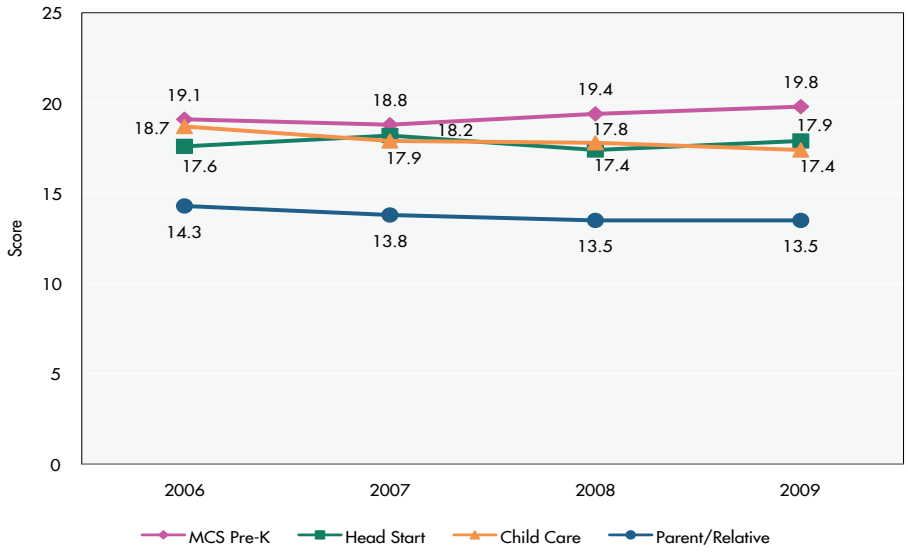
FIGURE 3:
Kindergarten Readiness Indicator Language Scores by Type of Care Before Kindergarten, 2006-2009

Source:
Banks, T. & Sell, M. The effects of pre-k experience on Kindergarten Readiness Indicator scores: 4 year trends. Memphis City Schools Office of Evaluation.

The pattern that emerges is consistent with national research showing that pre-kindergarten tends to provide more benefits than other kinds of programs. As a group, children who attended MCS Pre-K had the strongest language development. Center-based care and Head Start programs were less beneficial than Pre-K but more beneficial than parent/relative care. The same pattern is seen in KRI math scores, although the comparative advantage of MCS Pre-K is slightly smaller (Figure 4).

FIGURE 4:
Kindergarten Readiness Indicator Math Scores by Type of Care Before Kindergarten, 2006-2009

Source: Banks, T. & Sell, M. The effects of pre-k experience on Kindergarten Readiness Indicator scores: 4 year trends. Memphis City Schools Office of Evaluation.



Early learning experiences matter for kindergarten readiness and school success.

In early childhood, before school begins, a child's developmental trajectory is shaped, for better or worse, by her environment. Many children in Memphis are routinely exposed to risk factors associated with economically and socially vulnerable homes and families. Fortunately, high-quality early learning experiences can help protect these children by promoting optimal development and increasing the likelihood that they will reach school ready to learn and thrive.

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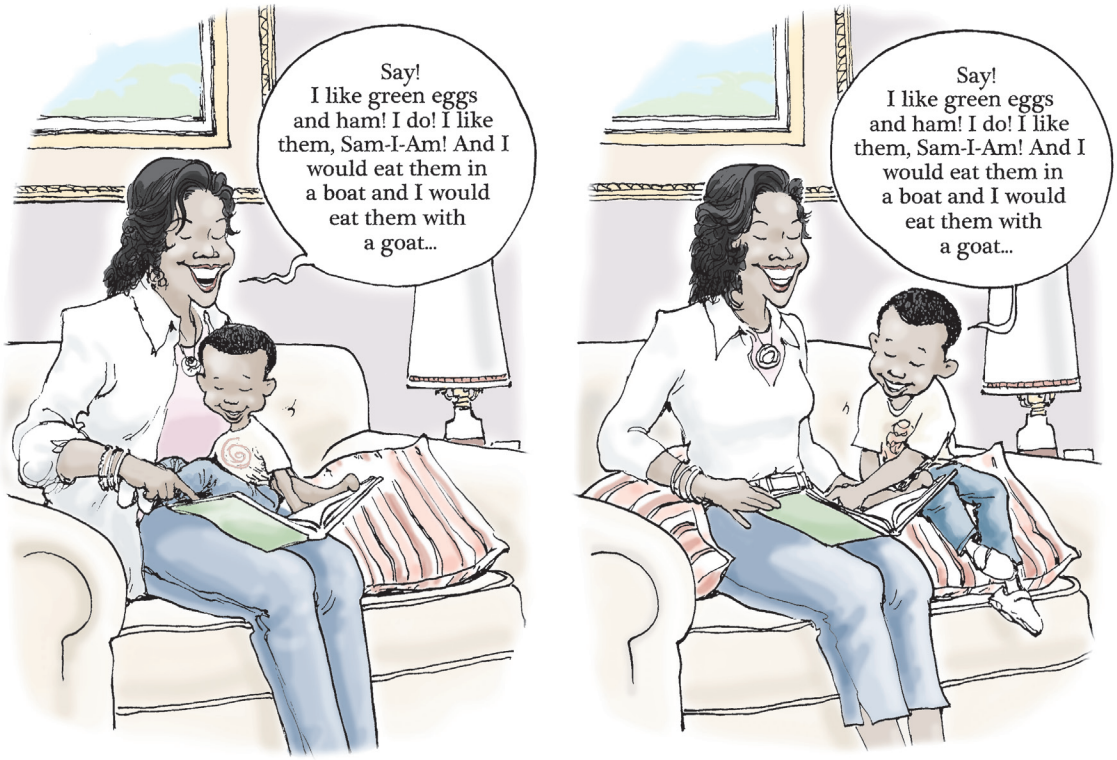


Parents build the foundation for the children's development.

A child's earliest years are the foundation for the rest of his life – not just because they come first, but because his development is more flexible during this period than it will be in the future. This flexibility, or "plasticity," is due in large part to the dramatic pace of brain development during this period. At birth, the wiring of the brain is incomplete; over the next few years, the brain continues to create the connections that are the basis of thinking and learning. The strength and efficiency of these connections are strongly influenced by a child's earliest experiences.[1]

Parents are by far the most prominent influences on a child during the first three years, and they have an enormous amount of responsibility for their children's development. In addition to needing a healthy and safe environment, a child relies on his parents to teach him language skills, coach him in appropriate behaviors, and serve as models for his future relationships.[2] Research consistently shows that a child's achievement, behavior, and adjustment are related to the quality of parenting he received in his first years. In some cases, parenting has direct and measurable effects on the brain: several studies have linked low-quality parenting, harsh discipline, and stressful home environments to abnormal patterns of brain activity.[3,4]

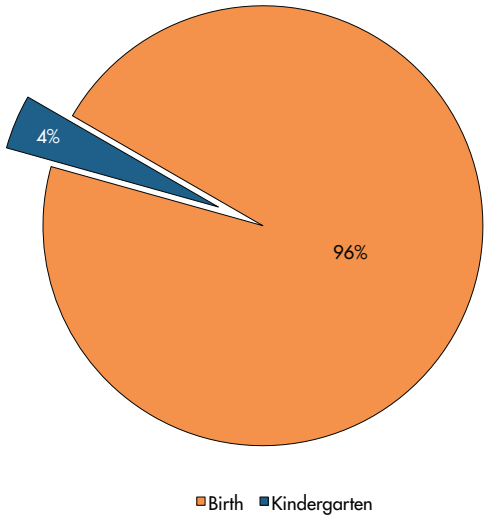
Quality caregiving requires an understanding of how children develop.

Parents want what is best for their children, but not all parents understand the importance of their children's first few years of life. Parenting style is strongly affected by parents' knowledge and beliefs.[5] Parents who are familiar with developmental stages and milestones judge their children's progress accurately, have realistic expectations, and provide stimulating home environments. Parents without such knowledge often expect too much from their children, which can lead to impatience, anger and inappropriate discipline. They may also expect too little: not knowing what their children are capable of at a given age, less-informed parents are unlikely to challenge them to reach their potential. Not surprisingly, then, children of more knowledgeable parents have better cognitive and behavioral outcomes.[6-8]

How well do parents in Shelby County understand the processes of early childhood development? To address this question, we use the results of the 2009 Early Childhood Development Public Opinion Poll, sponsored by The Urban Child Institute. 600 Shelby County residents were polled by telephone on a number of issues related to child development and early education. In this chapter, we examine how respondents with children answered a subset of fifteen questions relevant to parenting and early brain development.

FIGURE 1: When does learning start

Source: Early Childhood Development Public Opinion Poll, 2009.



Learning begins at birth.

Long before a baby begins crawling, walking, and talking, he is developing other skills that are less noticeable but just as important. A great deal of language learning, for instance, happens in the first year of life. Before a baby comprehends speech, he learns to translate it from a steady stream of sound into meaningful patterns and individual words. Memory and attention skills are also developing during these early months.[9]

96 percent of Shelby County parents understand that learning begins at birth, not when a child begins school (Figure 1).

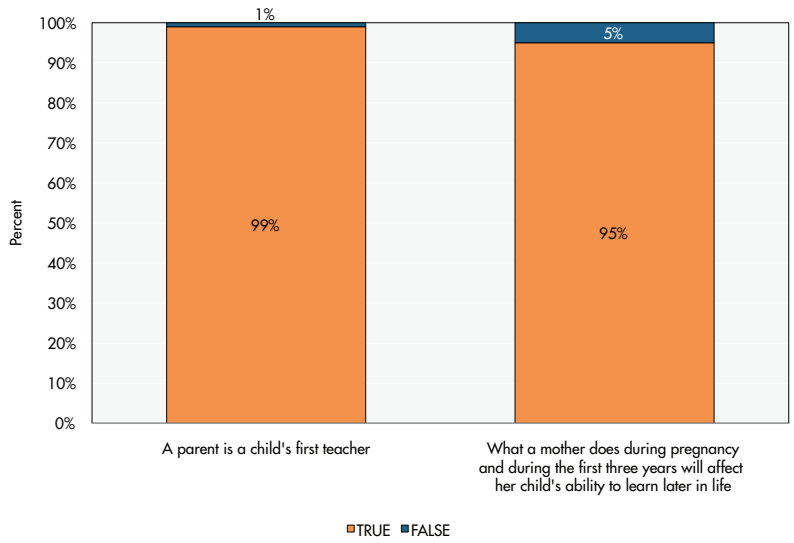


FIGURE 2:
Do parents understand the importance of early parenting for their children's learning

Source:
Early Childhood Development Public Opinion Poll, 2009.

Parents play an essential role in how children learn.

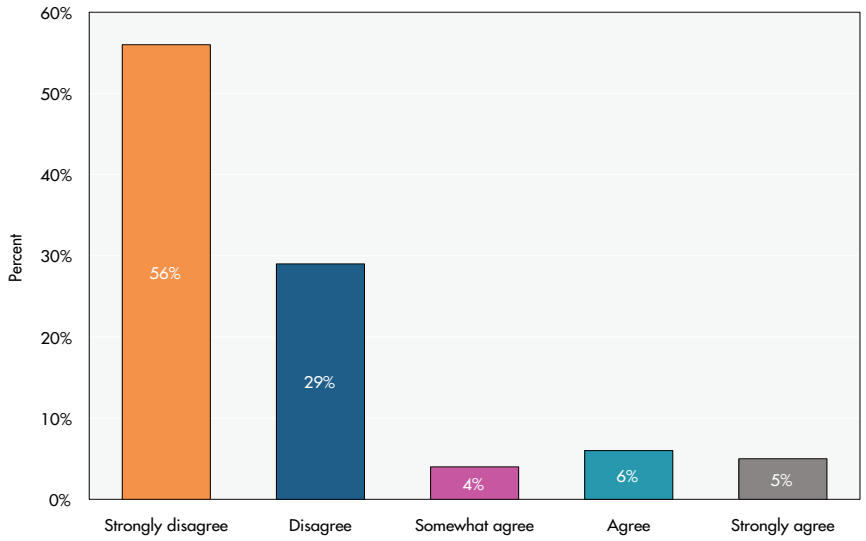
Parents play an important role in children's mastery of early cognitive and social skills; these skills, in turn, are strongly related to later academic and behavioral outcomes. Teaching does not begin with helping a child learn his first words; it starts at birth. Even before a baby can understand what his parents are saying, he is learning important lessons from their tone of voice, their facial expressions, and their body language. Sensitive parenting, positive feedback, and emotional support are necessary ingredients for effective learning, from the earliest perceptual skills to later problem-solving abilities.[10]

Even before a child is born, his parents and home environment are shaping his future abilities. The nine months in the womb are a critical period for brain development, and prenatal exposure to substances such as nicotine, marijuana, and alcohol has been linked to several negative outcomes for children, including attention disorders, behavior problems, learning deficits, and memory impairment.[11] Using electroencephalogram (EEG) recordings, scientists have identified differences in language-related brain activity between newborns whose mothers smoked and those whose mothers did not.[12]

Almost all respondents with children agree that a child's parents are his first teachers. 95 percent understand that what a mother does during pregnancy and the first three years influences her child's ability to learn later in life (Figure 2).

FIGURE 3:
How did parents react to the statement, "A child's ability to learn is set from birth, so the parents' interaction does not affect brain development"

Source:
Early Childhood Development Public Opinion Poll, 2009.



Parent-child interactions affect brain development.

The early cognitive skills that support learning depend on healthy brain development. When a child is born, her brain already has all of the neurons (nerve cells) it will ever have.[13] In order to function, however, these neurons must make connections – called synapses – that allow them to send, receive, and process information. Throughout the first years of life the brain creates an excess of synapses, then, around age three, begins to prune away those that are rarely or never used.

A child's early experiences play a role in determining which of these connections will survive and which will be eliminated.[14] When a baby hears her mother's voice or watches her facial expressions, synapses in corresponding brain areas become stronger and better organized. Stimulating, developmentally appropriate experiences – from language and music to colors and shapes – promote strong synapses and efficient networks.

Most Shelby County parents recognize the importance of the parent-child relationship for early brain development: only 15 percent agreed with the statement that the interactions between a child and her parents do not affect brain development (Figure 3).

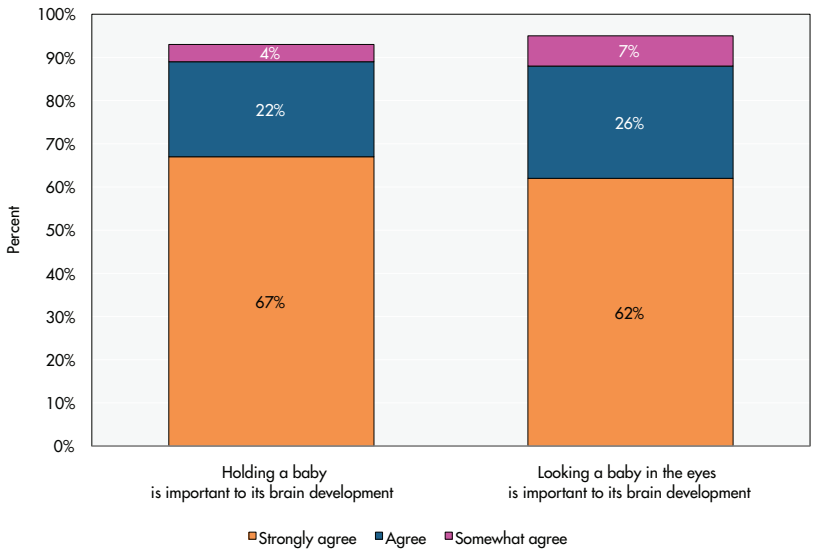


FIGURE 4:
To what degree do parents agree that positive interactions such as holding a baby and making eye contact foster brain development

Source:
Early Childhood Development Public Opinion Poll, 2009.

Nurturing behaviors promote brain development.

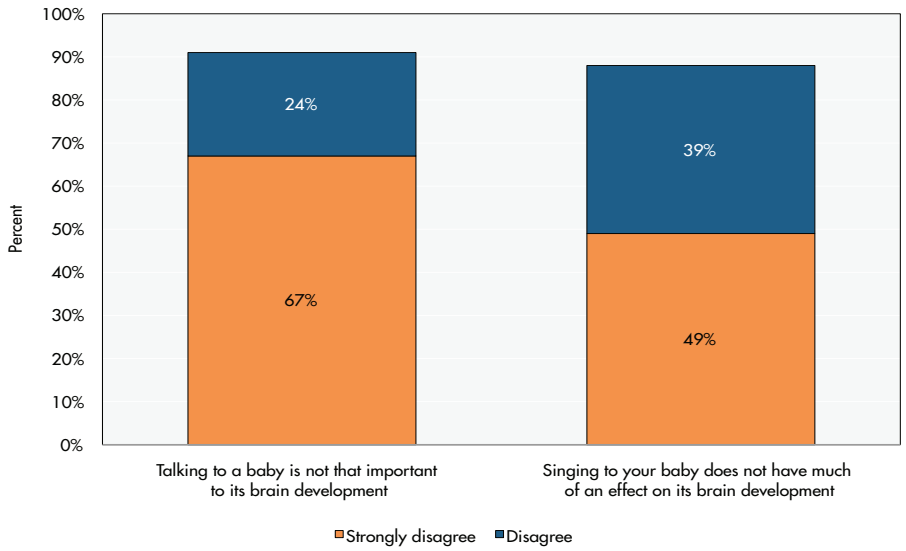
A baby needs a secure emotional attachment to her parents and caregivers. Activities that strengthen this bond also strengthen connections in emotion-related areas of the brain.[15] Physical contact is critical for the formation of a strong attachment.[16] Touching and holding promote brain development, cognitive development, and physical health.[17]

Infants obtain a great deal of information by observing faces. From birth, they are sensitive to eye contact and have the ability to follow the gaze of another person. The brain's social networks – the regions involved in processing faces and body language – are strengthened by nurturing and affectionate behaviors like physical touch and eye contact.[18,19]

Parents in Shelby County understand the importance of nurturing interactions like these. 93 percent of parents agreed that holding a baby is important in promoting brain development, and 95 percent said the same about looking into a baby's eyes (Figure 4).

FIGURE 5:
How strongly do parents disagree that talking and singing to a baby does not affect brain development

Source:
Early Childhood Development Public Opinion Poll, 2009.



Talking and singing to a baby stimulates language-related areas of her brain.

Talking is one of the most effective ways that parents can promote brain development. The language a baby hears during the first months of life helps neural circuits related to speech perception become more specialized and efficient. The speech she overhears is one source of input, but she learns more when her parents address her directly. Eye contact and facial cues sharpen her focus and make learning effective.[20,21]

When talking to their infants, parents tend to adopt a simplified, melodic delivery that shares many qualities with singing. Like singing, this style (sometimes called motherese or parentese) is characterized by repetition, raised pitch, and short utterances. The simplified and exaggerated language of singing and parentese is naturally appealing to babies and makes learning easier.[22,23]

Roughly 9 out of 10 Shelby County parents understand the importance of language for brain development. 91 percent disagreed or strongly disagreed with the statement that talking to a baby is not important to brain development, and 88 percent disagreed or strongly disagreed with the corresponding statement about singing (Figure 5).

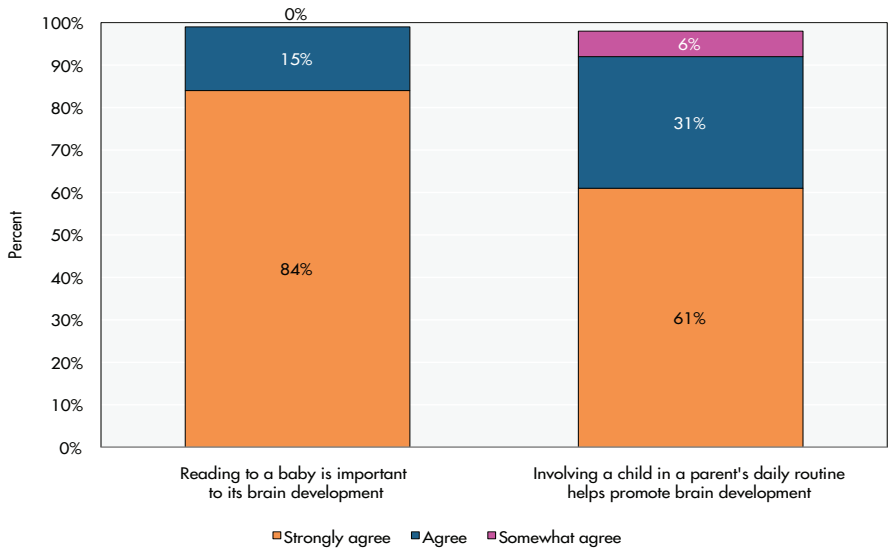


FIGURE 6:
What percent of parents agree that reading to children and involving them in daily routines are important for brain development

Source:
Early Childhood Development Public Opinion Poll, 2009.

Brain development can be fostered by a variety of activities.

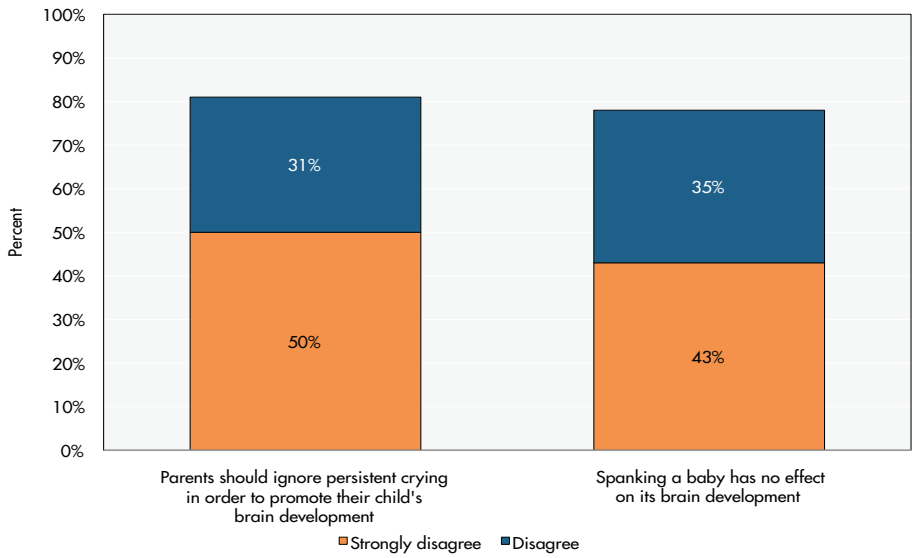
Reading to a child, even in infancy, promotes language development. Sharing a book with a baby exposes her to a larger and more diverse vocabulary than she might otherwise hear, which increases the efficiency of language-related areas of the brain.[24,25] Studies show that reading to babies as young as eight months improves their language abilities in the second year, and benefits for even younger babies are likely.[26]

Less formal activities can also promote brain development. Creative use of daily routines can ensure that children learn a diverse vocabulary and receive a variety of stimulating experiences. A trip to the supermarket, for example, can introduce an infant to new shapes, colors, and smells. For toddlers, it can be an opportunity to learn new words or practice counting. Routines also give children a sense of stability and structure that is associated with better academic and behavioral outcomes.[27]

Poll results show that almost all parents (99 percent) feel that reading to a baby is important. Nearly as many (98 percent) recognize that involving children in parents' daily routines is important for brain development (Figure 6).

FIGURE 7:
Do parents understand that parenting strategies affect children's brain development

Source:
Early Childhood Development Public Opinion Poll, 2009.



Infants can't be spoiled.

Persistent crying can be frustrating for parents, and difficulty in soothing their child can cause parents to feel guilty or inadequate. In extreme cases, it can lower the quality of the parent-child relationship and may even lead to maltreatment and abuse.[28] Because crying can have many causes, there is no one-size-fits-all solution. However, research suggests that infants cannot be "spoiled" and that parents should respond to a baby's distress signals. Compared to babies whose parents ignore or react negatively to crying, those whose parents are responsive and soothing eventually display less crying and fussing, an improved ability to sooth themselves, and more sociability and curiosity.[29]

In the U.S., most parents consider spanking an appropriate form of discipline for preschoolers and slightly older children.[30] A substantial minority, however, report that they spank their infants and toddlers;[31] research on child development strongly discourages this practice. Spanking children under two years old, in addition to being ineffective and dangerous, can disrupt brain networks related to emotional attachment and stress management.[32-34]

Most Shelby County parents believe that parents should not ignore a baby's cries. 81 percent of respondents disagree or strongly disagree with the claim that ignoring persistent crying promotes a baby's brain development. Parents also understand the potential harm of spanking very young children. 78 percent of participants disagree or strongly disagree that spanking a baby has no effect on brain development (Figure 7).

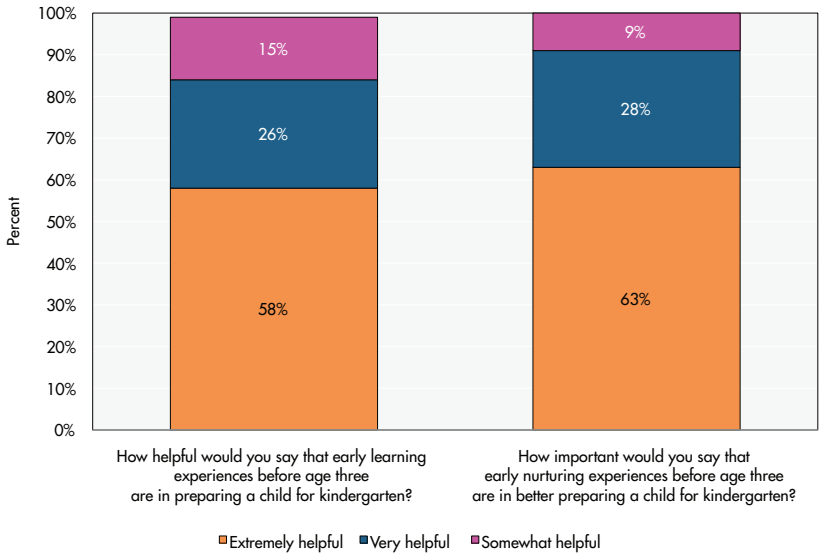


FIGURE 8:
Do parents believe that positive early experiences help prepare children for kindergarten

Source:
Early Childhood Development Public Opinion Poll, 2009.

Positive experiences during the first three years help prepare a child for school.

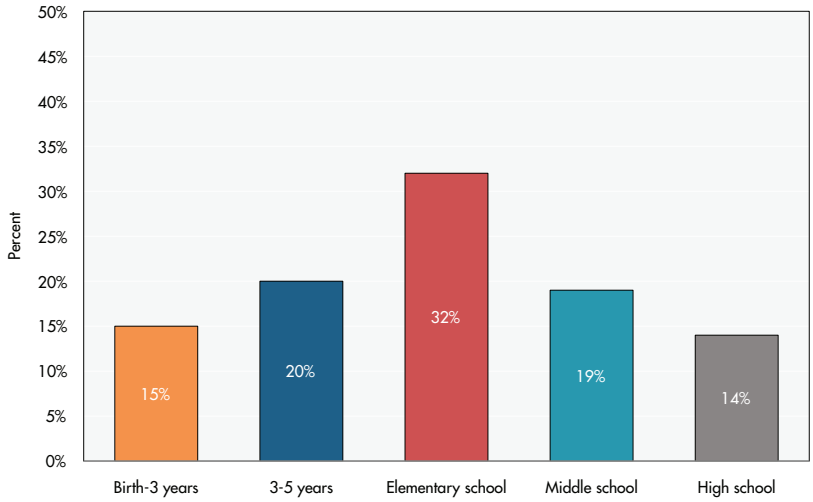
Entering kindergarten is a critical milestone in a child's development. Schools expect children to arrive ready to learn in a formal setting, and those who are unprepared often find it difficult to catch up later. Making a smooth transition to kindergarten requires cognitive, emotional, behavioral, and social skills that have been developing since infancy. A child's skill level is affected by early learning experiences, such as the language input he has received at home. Long before school begins, children whose parents use diverse and complex language get a head start in vocabulary and pre-reading skills.[35,36]

Early nurturing experiences also contribute to school readiness. Children of sensitive, responsive parents have been found to achieve language milestones earlier than other children[37] and to have better language comprehension and verbal abilities.[38] Additionally, nurturing lays the groundwork for healthy emotional and social development in early childhood and beyond.[39] Emotional adjustment and social skills are essential components of school readiness.[40]

Across Shelby County, parents recognize that early experiences matter for school readiness. Almost all respondents with children consider learning experiences and nurturing experiences before age three to be helpful in preparing children for kindergarten (Figure 8).

FIGURE 9:
If we want to improve the quality of learning for children in Shelby County, among which age should we invest our public dollars

Source:
Early Childhood Development Public Opinion Poll, 2009.



Investing in children early provides the biggest returns.

Investments targeting the first three years not only provide the highest rate of return, but also reduce the cost of later interventions. For example, programs targeting children under three can decrease grade retention, increase graduation rates, and reduce the need for special education services, resulting in lower costs to the education system.[41,42]

The poll results presented in this chapter indicate that Shelby County parents realize the importance of children's early experiences – especially in the first three years – for brain development, school readiness, and future achievement. But are they ready to support public investments in this age group? We asked respondents to choose the age range in which Shelby County should invest in order to improve the quality of learning.

Given that parents repeatedly affirmed the importance of children's first three years, it is somewhat unexpected that only 15 percent believe that this age range is the best target for investment. More parents chose the preschool period (age 3-5), and twice as many chose the elementary school years (Figure 9).

What can we learn from the 2009 Early Childhood Development Public Opinion Poll results?

Parents in Shelby County understand the importance of the first three years for children's brain development and well-being. However, they show little support for public investments to improve the quality of learning experiences during this period. There are several possible reasons for this. For instance, some parents may feel that children's first years are exclusively a family matter. Americans have traditionally held that the government's role in matters concerning children and families should be limited.[43]

Another possible explanation involves the poll itself. Poll respondents may have answered differently if the question had been more specific. Compared to government funding for preschool and elementary school, the idea of public investments in children's first three years may seem unfamiliar. Without specific policy examples, parents may have felt that improving preschool or elementary school quality was the most responsible use of resources.

The results of the 2009 poll suggest that although Shelby County parents understand the importance of a child's earliest experiences, they are not yet convinced that early childhood development is a public concern. In reality, the first three years of life – when the brain is still "under construction" – are the most promising opportunity for making meaningful changes in the lives of our community's children. The cognitive, social, and emotional lessons they learn during these years have the potential to last a lifetime.

Public awareness of the importance of brain development is a good start. The task that remains is to convert awareness into action. Our community needs to champion early brain development with policies that support positive parenting and ensure that all children have a fair start in life. Parents, schools, neighborhoods, businesses, and government can each play a role in providing Shelby County's children with early experiences that promote healthy development, academic achievement, and future success.

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How Neighborhoods Affect Children's Well-Being

Just as a child's life is shaped in part by her family, it is also affected by neighborhood conditions. Some neighborhoods are places where parents know their neighbors, where children see positive role models, and where opportunities outnumber risks. In other neighborhoods, crime and violence are common, neighbors avoid each other, and children's home environments are affected by stress and isolation.

Neighborhoods in Memphis and Shelby County are undergoing far-reaching changes. Beginning in the 1990s, the traditional pattern of inner-city disadvantage and suburban affluence unraveled as poverty and its associated risks spread into outlying areas. This process, which is still underway, has important implications for child well-being in our community.

Poverty endangers children's development.

A poor neighborhood is not just an area where poor people live – it is an area that is poor in resources like good schools, quality child care, and safe recreation. Children need these resources in order to thrive. On average, growing up in an area of concentrated poverty means poorer health, lower school achievement, and worse adult outcomes.

- In poor neighborhoods, parents are less likely to have the social support of a network of friends and family. Low levels of social support increase parents' stress and make it more difficult for them to be effective.[1]
- In neighborhoods that are unsafe, children watch more television, take part in fewer after-school activities, and are more likely to be overweight than children in safer communities.[2,3]
- Children who live in high-poverty neighborhoods are less likely than their peers to graduate from high school, and their adult earnings are lower.[4]

The geography of poverty in Memphis has been changing for the past two decades. Before the early 1990s, poverty was situated largely in downtown public housing and in a few older neighborhoods like Orange Mound and Binghampton. Since then, however, market forces and relocation programs have moved many poor Memphians into outlying areas like Frayser, Raleigh, Whitehaven, and Hickory Hill.

The red areas in Figure 1 represent classic distressed neighborhoods, where poverty is long-standing and entrenched. Yellow areas represent vulnerable neighborhoods, where clusters of poverty have become evident in the past 10 to 15 years. Almost half the neighborhoods in Memphis are now affected by poverty. (In this chapter we equate neighborhoods with census tracts, a standard practice in neighborhood studies.)

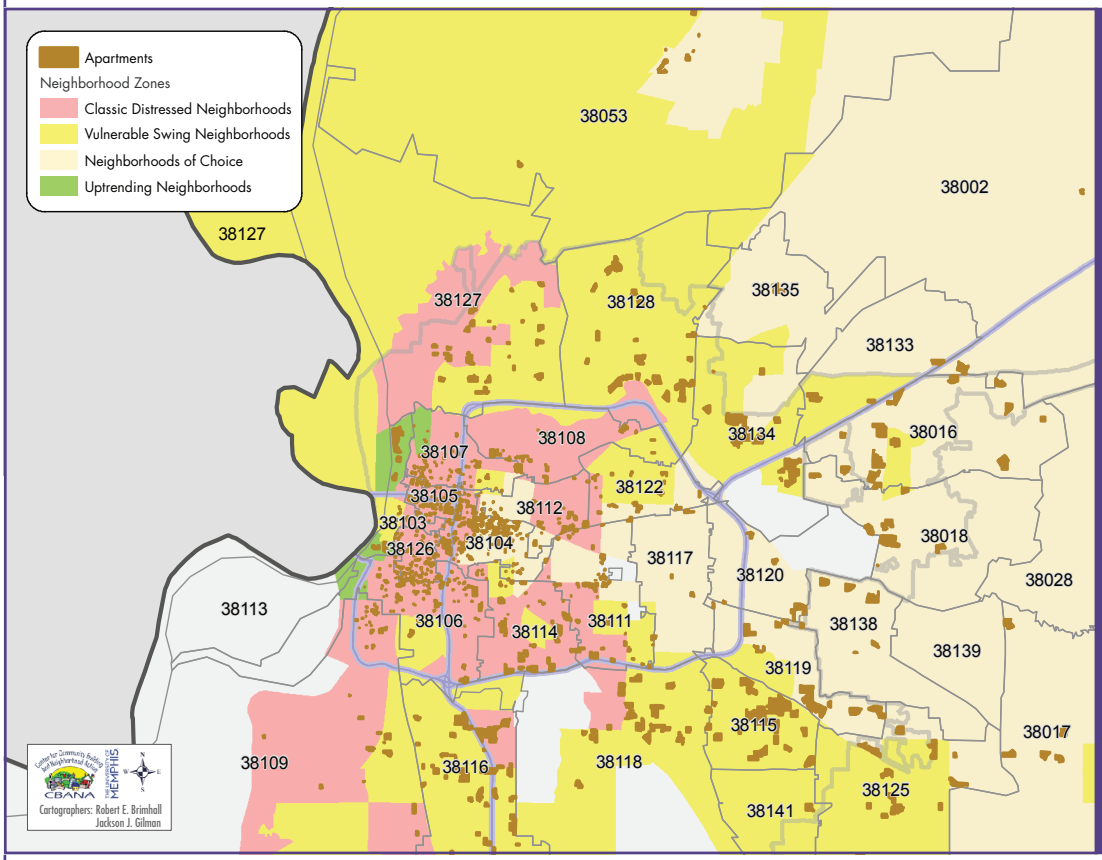


FIGURE 1:
Neighborhood Zones with Zip Codes

Source:
Center for Community Building and Neighborhood Action/InfoWorks Memphis Neighborhood Change Database from federal data.

Neighborhoods affect childbearing patterns and infant health.

Neighborhoods differ from one another in ways that influence pregnancy and birth. Neighborhood factors affecting childbearing patterns and birth outcomes include access to health care, quality of available food, amount of environmental toxins, and availability of safe places to exercise.[5]

Neighborhoods of concentrated poverty are disproportionately affected by teen childbearing, low birth weight, and infant mortality.

- Young women growing up in high-poverty neighborhoods are more likely to give birth as teens. Children born to teen mothers are at risk for later problems such as antisocial behavior, unemployment, and early parenthood.[3,6-8]
- Babies of mothers who live in high-poverty environments are more likely to be born at low birth weight. Children who were low birth weight infants tend to perform worse on measures of cognitive development, behavioral adjustment, and physical health.[9-11]
- Infant mortality is more common in high-poverty areas, a pattern that is only partly explained by related factors like smoking and lack of prenatal care.[12,13]

Risk factors like teen pregnancy, low birth weight, and infant mortality are prevalent in both distressed neighborhoods and vulnerable neighborhoods (Figures 2, 3 and 4).

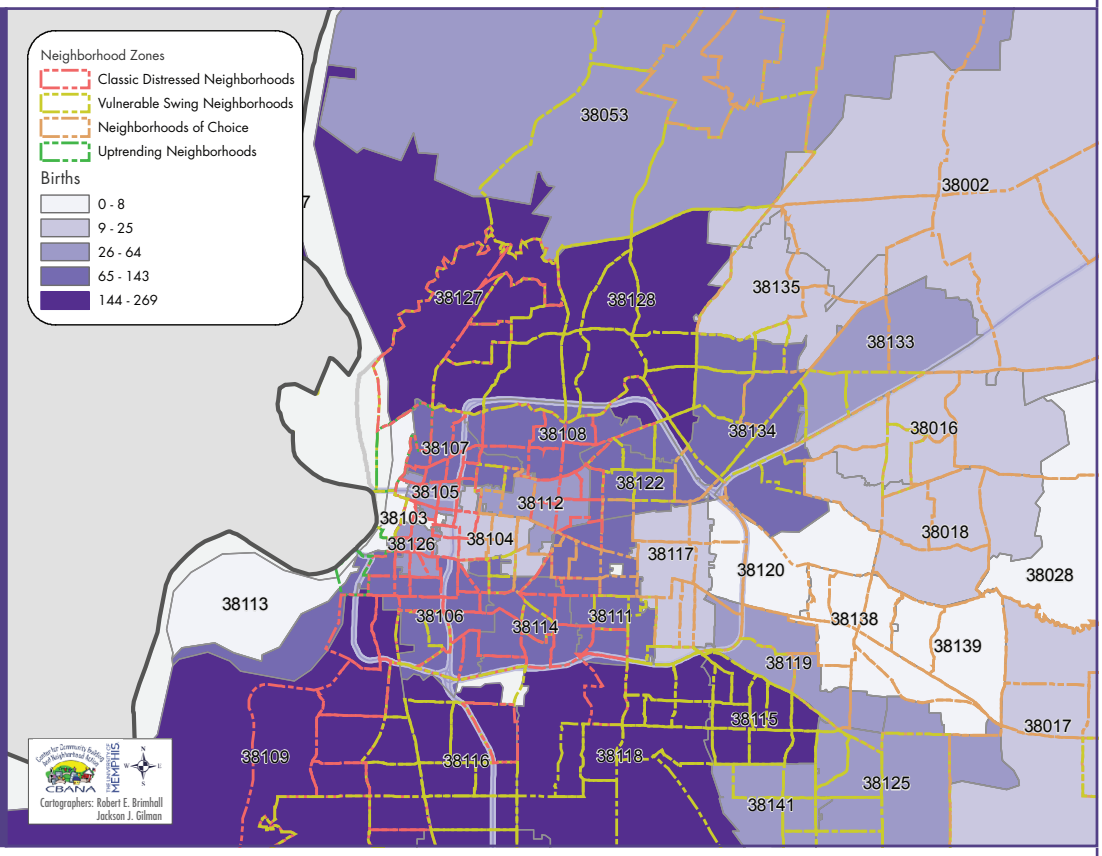


FIGURE 2: Number of Teen Pregnancies by Zip Code

Source: Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data 2008.

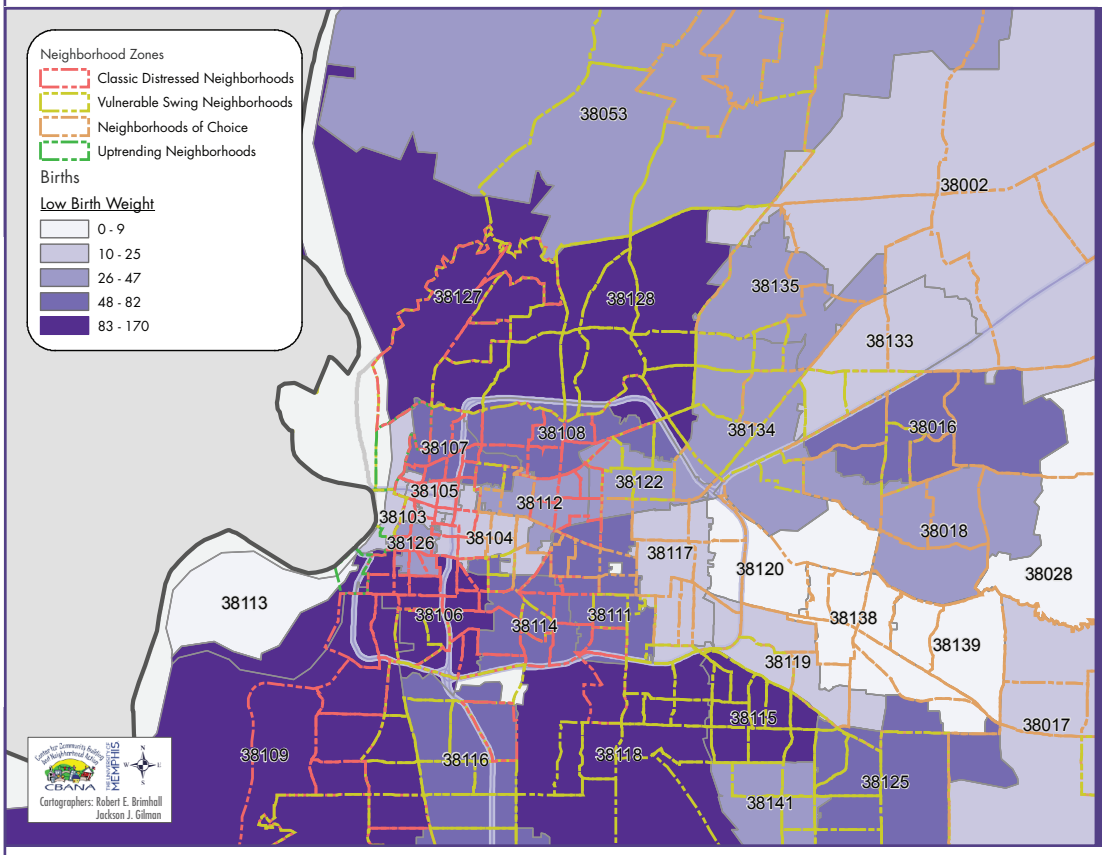


FIGURE 3:
Number of Low Birth Weight Births by Zip Code

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data 2008.

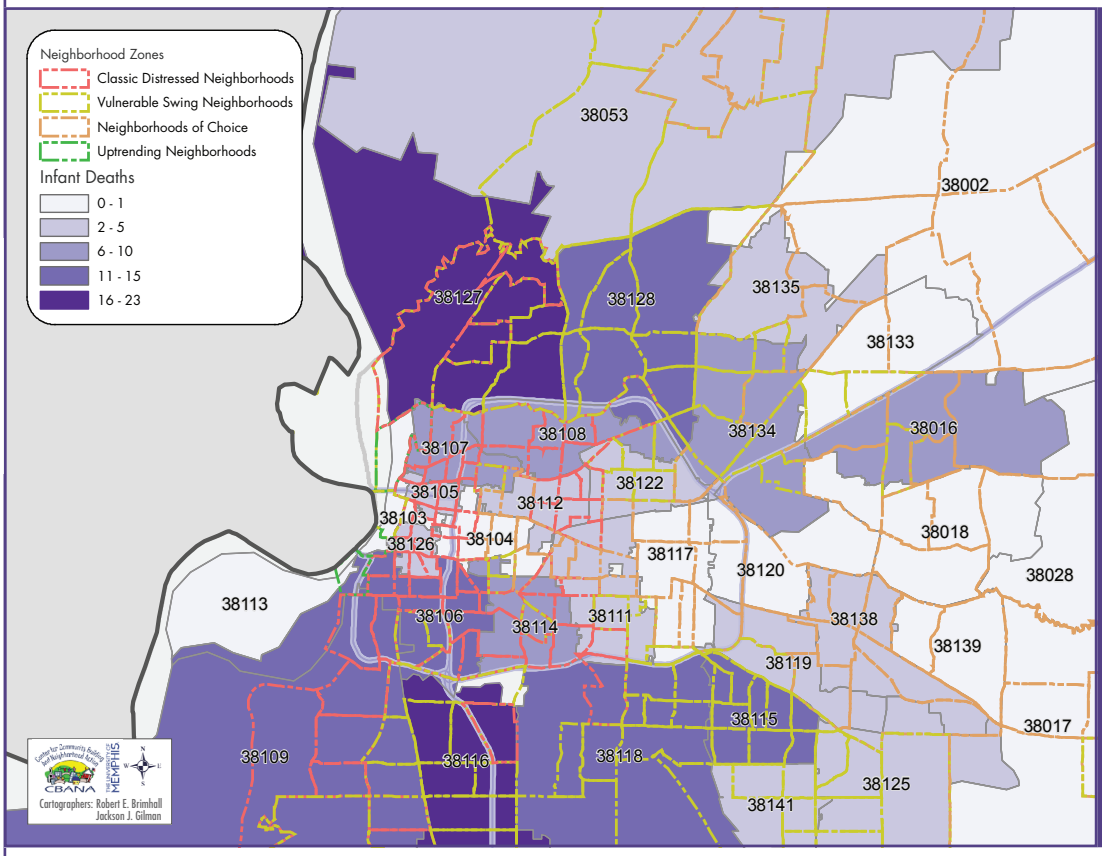


FIGURE 4:
Number of Infant Deaths by Zip Code

Source:
Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data 2008.

Poverty increases children's chances of witnessing domestic violence.

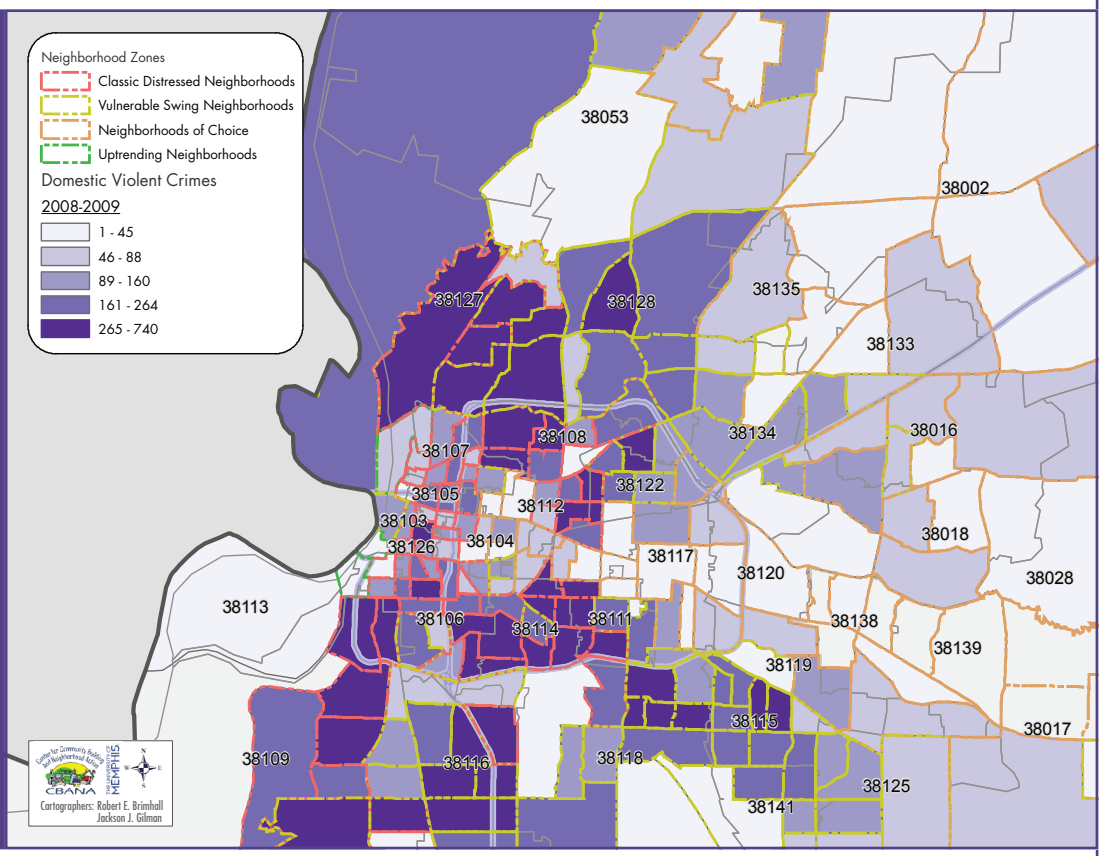
Children who live in high-poverty neighborhoods are more likely than other children to witness domestic violence.[14] The fear, stress, and self-blame that often accompany exposure to family violence are traumatic for children and can have long-term consequences.

- The negative effects of exposure to domestic violence include low self-esteem, sleep disturbances, physical symptoms, aggressive behavior, and impaired social development.[15]
- Children who are exposed to domestic violence are at increased risk for emotional, physical, and sexual abuse.[15,16]
- Witnessing domestic violence represents a serious threat to a child's development regardless of age.[15]

Figure 5 shows the number of reported domestic violence crimes by zip code.

FIGURE 5:
Number of Domestic Violence Crimes by Zip Code

Source:
Memphis Police Department, Center for Community Criminology and Research, and Center for Community Building and Neighborhood Action/InfoWorks Memphis Community Safety Domain.



Poor children change schools often.

Poor families tend to move frequently – typically from one high-poverty area to another.[17] Residential mobility is one way that high-poverty neighborhoods affect the children and families who live in them.[18] In areas where families move in and out often, social ties are weak and protecting children from negative influences is more difficult.

High mobility also means that poor children change schools more often than other children – often in mid-year. Frequent school transfers make children vulnerable to academic failure, behavior problems, and high school dropout.[19]

For each school in the system, Memphis City Schools calculates a stability rate – essentially the percentage of students who are enrolled in a school for the entire academic year. A stability rate of 80, for example, means that of all the students who enrolled in that school at the start of the year, 80 percent were still enrolled there at the end of the year, and 20 percent changed schools.

Memphis and Shelby County as a whole are characterized by high residential and school instability. Schools with low stability rates are disproportionately located in vulnerable and distressed neighborhoods, as shown in Figure 6.

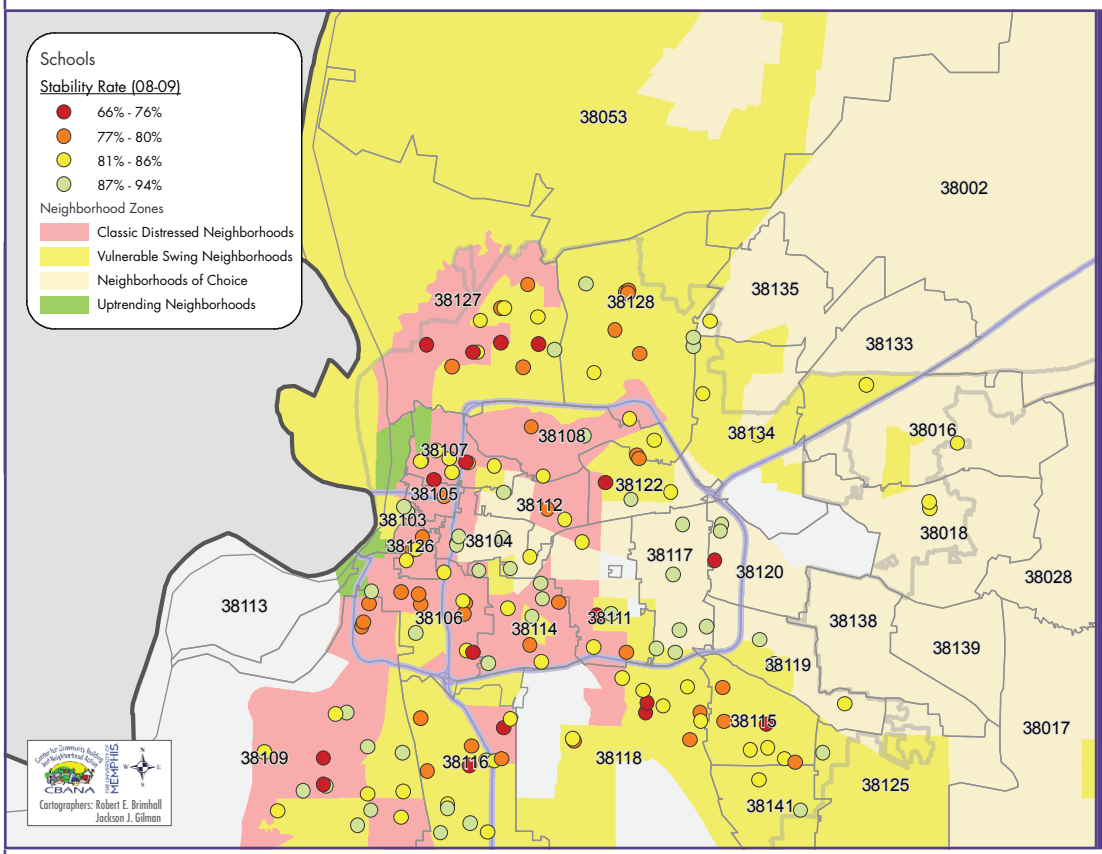


FIGURE 6:
School Stability

Source:
Memphis City Schools, Research Evaluation & Assessment. Stability Index. 2010.

Community services should be near families who need them.

Social services for at-risk families have traditionally been based in distressed neighborhoods, while higher-quality amenities such as nationally accredited child care have most often been found in stable middle-class areas. With poverty and its related risks spreading to vulnerable neighborhoods, there is a need to rethink how we provide social services. Service providers, child advocates, and community stakeholders are increasingly targeting vulnerable neighborhoods in an effort to reach families where they live.

For instance, the Community Voice program – an education/awareness initiative to improve birth outcomes and child health – focused on distressed neighborhoods during its first year. In the following years, recognizing the changing distribution of poverty, Community Voice began to diversify its locations accordingly (Figure 7).

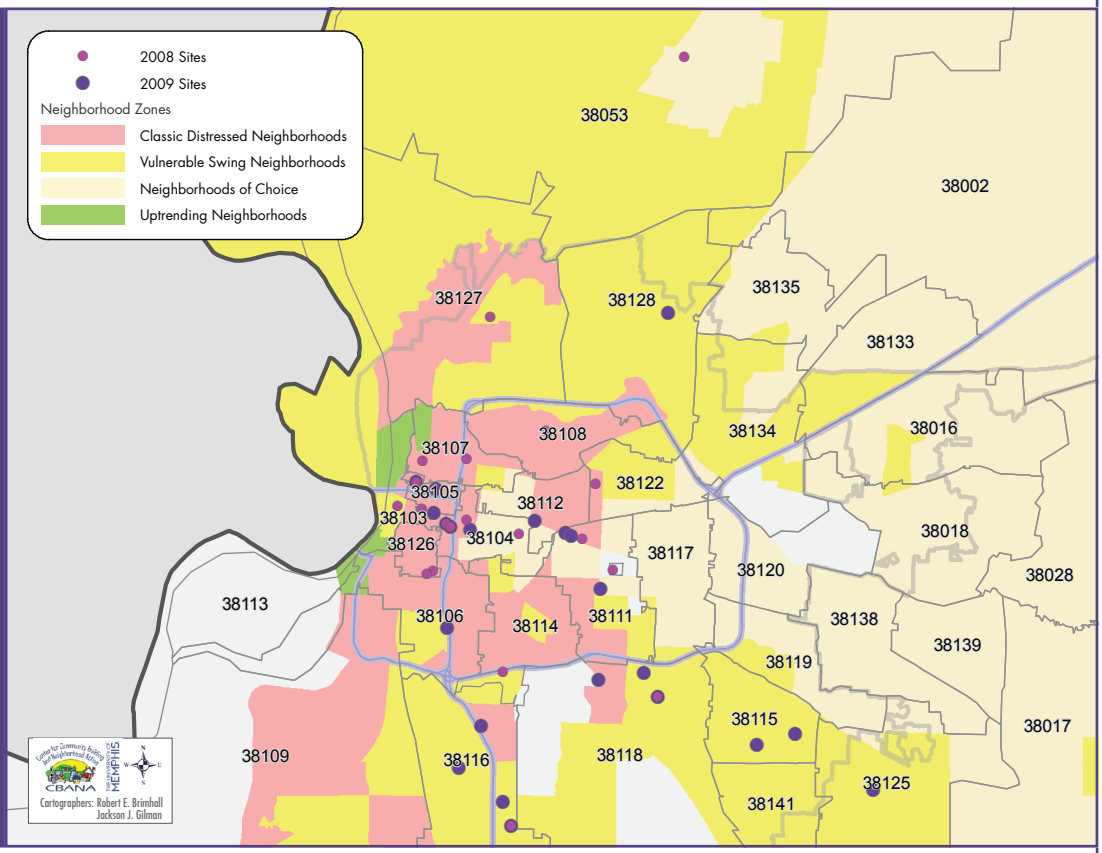


FIGURE 7:
Community Voice Sites

Source:
Community Voice Program Evaluation. Center for Research on Women. March 2010.

For many years, the few nationally accredited child care centers in Memphis and Shelby County were concentrated in middle-class neighborhoods. The Ready, Set, Grow initiative, established in 2004, sought to increase the number of centers accredited by the National Association for the Education of Young Children (NAEYC) and ensure that accredited centers were located in areas convenient to lower income families.

Figure 8 shows the 2004 and 2010 locations of NAEYC-accredited centers by zip code; the percentage of residents receiving the Earned Income Tax Credit (EITC) is used as a rough measure of neighborhood socioeconomic status. Comparing center locations for 2010 with locations in 2004 shows that deliberate strategies can increase neighborhood-level resources and may decrease neighborhood risk factors, and reduce disparities between affluent and low-income neighborhoods (Figure 8).

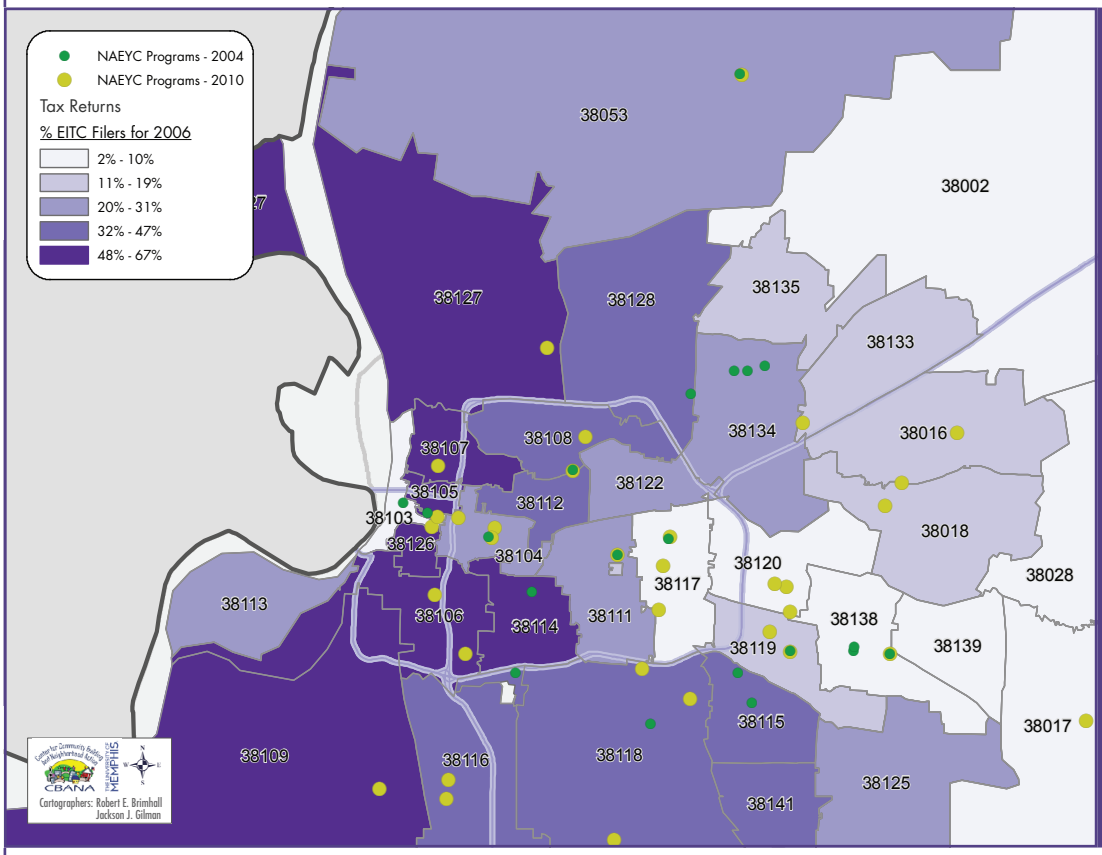


FIGURE 8:
NAEYC Programs and Percent of EITC Filers by Zip Code

Source:
Ready, Set, Grow! Initiative, College of Education, University of Memphis 2010.

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Community Voice Program Evaluation. Center for Research on Women. 2010. Available at: http://www.memphis.edu/crow/pdfs/CV_Annual_Report_2009_3-31-10.pdf. Accessed on June 4, 2010.

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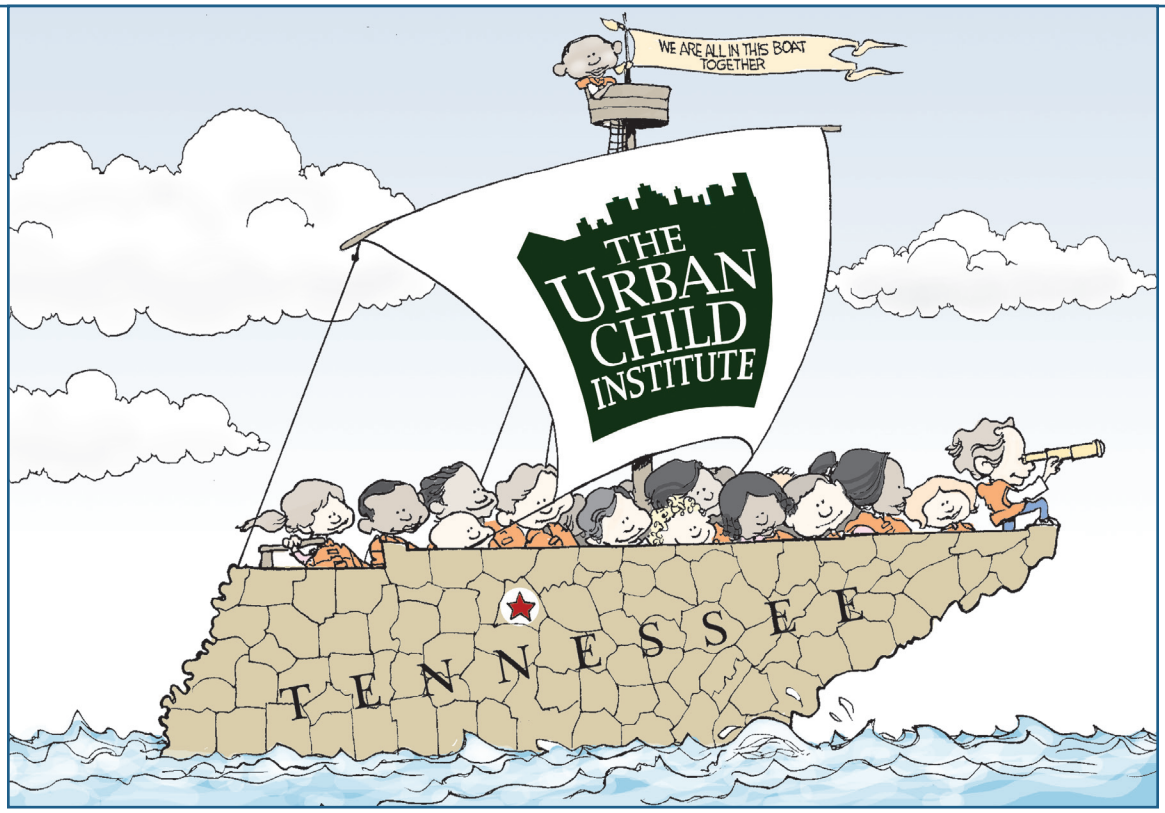


In previous sections of this year's *Data Book*, we examined numerous risks faced by children in Memphis and Shelby County – risks that make some children less likely than others to grow into healthy, happy, and productive citizens. The next step is to ask what can be done to reduce these developmental disparities. How can our community level the playing field and ensure that all of our children have a fair chance?

Answering this question is one the greatest challenges facing our community. Fortunately, we can learn a great deal about what works from studies that evaluate intervention efforts and ongoing programs. Each year, the Best Practices chapter of the *Data Book* draws upon this research to highlight programs that have been successful at improving children's lives. This year, the highlighted initiative is Porter-Leath, a Memphis-based nonprofit organization.

What is Porter-Leath?

A visit to Porter-Leath should convince even the most jaded Memphian that great things are still happening in Memphis. For more than 150 years, Porter-Leath has been quietly changing the world by improving the lives of disadvantaged children and their families. Originally created as a home for orphans and widows, the Memphis nonprofit agency has evolved into a multi-service organization offering family counseling, high-quality preschool, food programs, and other services.

In 1998, Porter-Leath became the first Shelby County provider of the federal Early Head Start program. Until recently, Porter-Leath's Early Head Start program, with 95 slots, was the only one in Shelby County, where almost 30 percent of children live in poverty.

What is Early Head Start?

Early Head Start is a comprehensive, two-generation program created in 1994 to extend the benefits of the Head Start preschool program to children under three. Its goal is to improve infant and toddler development by providing support services for low-income families and quality education for their children. By reaching children during their first three years, when brain development is particularly responsive to positive experiences, Early Head Start has the potential to reduce the effects of disadvantage and increase children's chances for success.

Early Head Start is more than just child care. The support and education services it offers to parents are a key component in the program's ability to improve children's lives. Low-income parents are more likely than middle-class parents to suffer from chronic stress and poor health. Additionally, they face more financial worries, scheduling hassles, transportation problems, inflexible work environments, and other pressures involved in trying to make ends meet. Difficulties like these drain low-income parents' emotional resources and can lead to less responsiveness, less stimulating home environments, and harsher discipline.[1-3]

Early Head Start programs like the one operated by Porter-Leath help parents use more effective strategies and create more stimulating home environments for their children. Some research shows that up to half of Early Head Start's effect on children's development is due to the positive changes in parenting quality brought about by participation in the program.[4] Compared to other low-income parents, Early Head Start parents are more responsive, more effective at creating a stimulating home environment, and less likely to use corporal punishment.[5] Their children, in turn, have higher cognitive and language scores, stronger emotional and social skills, and better behavior.[5]

How effective is Early Head Start?

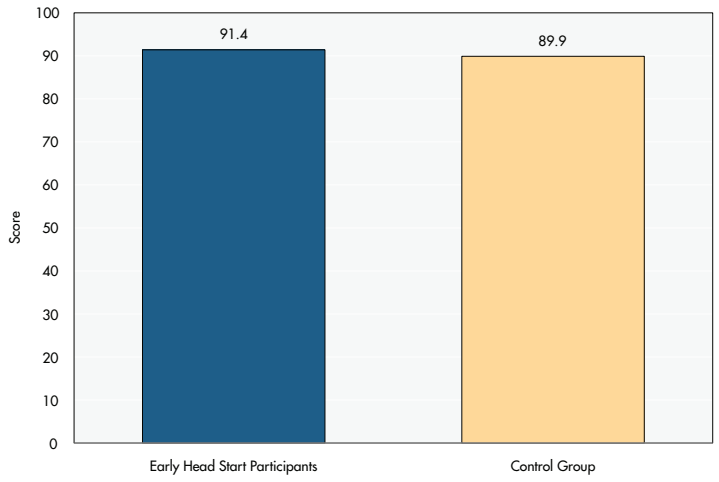
Extensive national research shows that Early Head Start improves children's cognitive scores, language development, and behavior, and has important positive effects on parenting. In a large-scale study of 17 Early Head Start programs across the country, 1,500 children entering Early Head Start were matched to a control group – a second group of 1,500 children with similar parents, families, and incomes who did not enter an Early Head Start program.[5] When the first group of children finished the program, both groups were tested on a number of cognitive, language, and behavioral measures. Comparing the scores of group 1 (Early Head Start participants) to those of group 2 (non-participants) gives an indication of the effects of Early Head Start participation on children's development.[5]

Early Head Start improves cognitive development.

Cognitive development begins long before a child begins kindergarten. Even before he can understand language, he is developing critical skills that are the framework for later abilities. Deficits in these primary skills can have long-term effects.

Cognitive skills were tested using the Bayley Scales of Infant Development – widely considered the gold standard of cognitive tests for this age group.[6] Early Head Start children scored an average of 91.4. Children in the control group had an average of 89.9 (Figure 1). (Although these effects, along with the others reported below, seem small, they are statistically significant. For more information, see the Appendix of the Data Book).

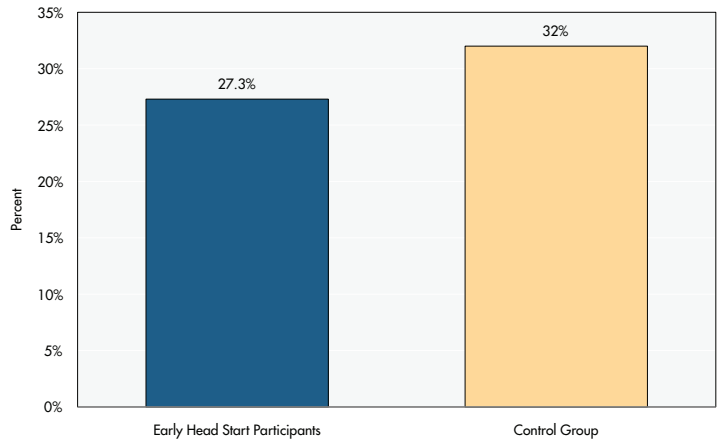
A child who scores below 85 on the Bayley Scales is considered to be at risk. Compared to the control group, fewer Early Head Start children scored in the at-risk range (27.3% vs. 32%)(Figure 2).



*Significantly different from zero at the .05 level, two-tailed test.

FIGURE 1:
Average Bayley Mental Development Index Score at Age Three

Source:
Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. Developmental Psychology. 2005;41(6):885-901.



*Significantly different from zero at the .10 level, two-tailed test.

FIGURE 2:
Percent of Children With At-Risk Bayley Mental Development Index Scores at Age Three

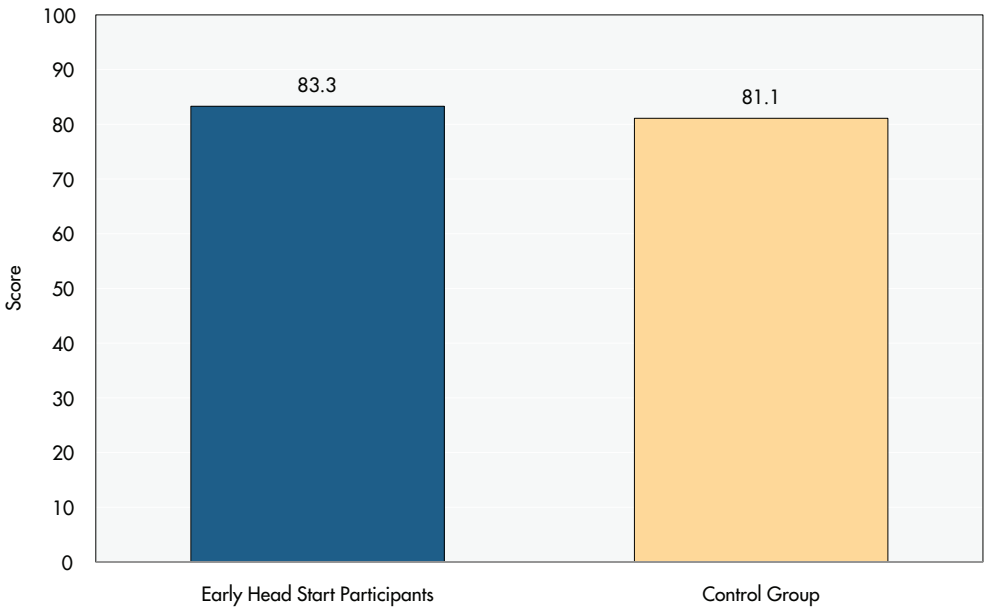
Source:
Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. Developmental Psychology. 2005;41(6):885-901.

Early Head Start boosts language skills.

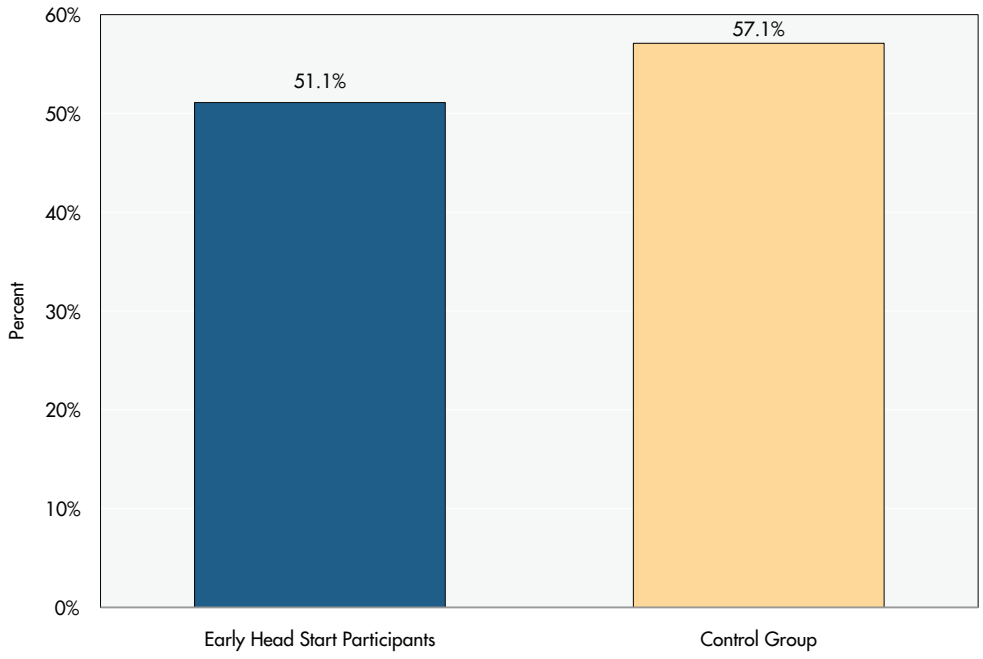
A strong foundation in language skills prepares children for school and for life. This foundation is built in infancy, and early delays often mean later difficulties.[7] Language skills were measured using the Peabody Picture Vocabulary Test (PPVT), which tests vocabulary comprehension. The Early Head Start group scored an average of 83.3, while the control group averaged 81.1 (Figure 3).

FIGURE 3:
Average Peabody Picture Vocabulary Test (PPVT) Standard Score at Age Three

Source:
Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. Developmental Psychology. 2005;41(6):885-901.



*Significantly different from zero at the .05 level, two-tailed test.



*Significantly different from zero at the .05 level, two-tailed test.

FIGURE 4:
Percent of Children With At-Risk PPVT Scores at Age Three

Source:
Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. Developmental Psychology. 2005;41(6):885-901.

Similar to the results for cognitive skills, fewer Early Head Start children than control children scored in the at-risk range for language. As with the Bayley Scales, a score below 85 on the PPVT indicates developmental risk. 51.1 percent of Early Head Start children scored in the at-risk range, compared to 57.1 percent of the control group children (Figure 4).

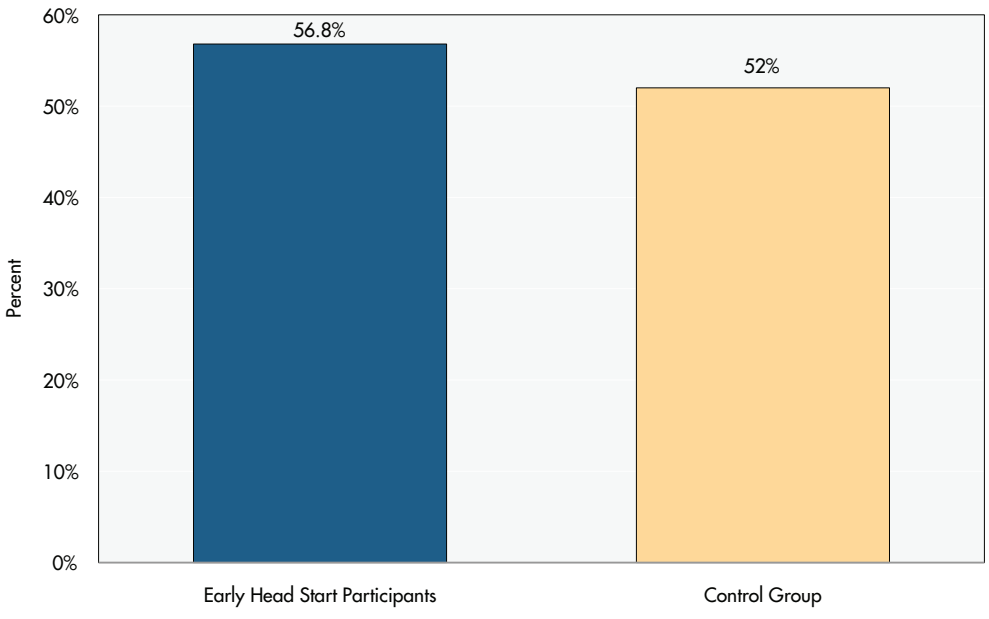
Early Head Start positively affects parenting.

Parents have a substantial influence on children's abilities. The home environments they create, the routines they establish, and the parenting styles they use affect their children's brain development. Supportive, responsive parenting is associated with optimal development. Harsh, punitive strategies can impair development and lead to poor cognitive and behavioral outcomes. Similarly, children whose parents provide a rich language environment through conversation and book reading are more prepared for kindergarten, while children who are rarely spoken or read to are at a grave disadvantage.[8,9]

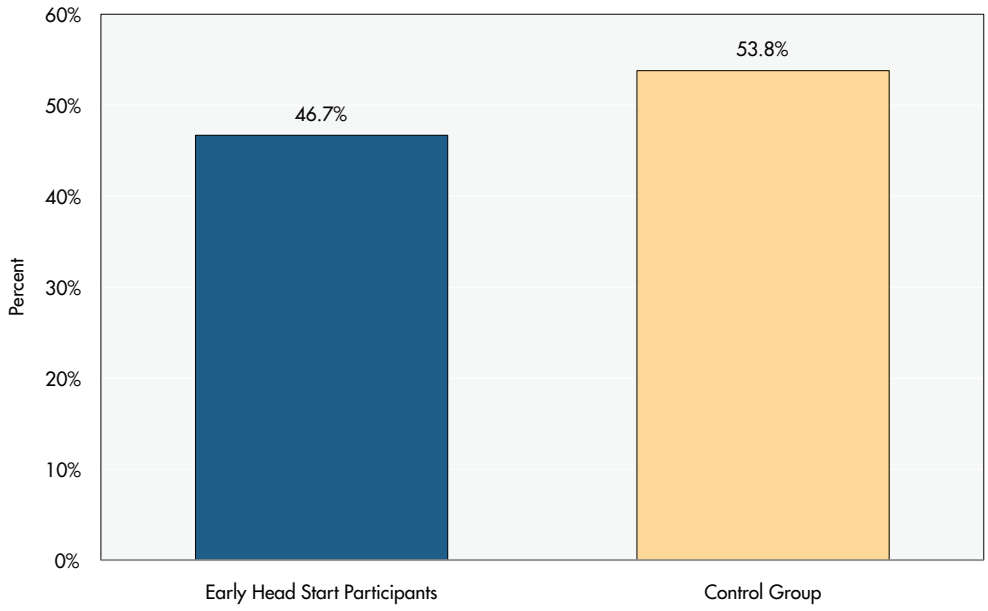
Early Head Start appears to improve children's home learning environments. For instance, 56.8 percent of Early Head Start parents reported reading to their children every day, compared to 52 percent of parents in the control group (Figure 5).

FIGURE 5:
Percent of Parents Who Read to Their Three Year Old Every Day

Source:
Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. Developmental Psychology. 2005;41(6):885-901.



*Significantly different from zero at the .05 level, two-tailed test.



*Significantly different from zero at the .01 level, two-tailed test.

FIGURE 6:
Percent of Parents Who Spanked Their Three Year Old in the Previous Week

Source:
Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. Developmental Psychology. 2005;41(6):885-901.

Early Head Start participation also seems to encourage parents to use more effective parenting strategies. Fewer Early Head Start parents than control parents reported having spanked their children within the past week: 46.7 percent vs. 53.8 percent (Figure 6).

Early interventions make a difference.

A child's first three years are a period of rapid brain development, and experiences during this time help establish the networks that support thinking and learning. Positive, stimulating experiences lead to strong and efficient connections.[10] In addition to providing such experiences directly, Porter-Leath and other Early Head Start help disadvantaged parents create home environments that promote early learning and optimal development. Porter-Leath serves as an example and an inspiration to everyone who cares about improving the lives of children in Memphis and Shelby County.

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Love JM, Kisker EE, Ross C, et al. The effectiveness of Early Head Start for 3-year-old children and their parents: lessons for policy and programs. *Developmental Psychology*. 2005; 41(6): 885-901.

Data Appendix

The *Data Book* is intended to be a source of accurate information on child well-being in our community. We also want it to be useful to a wide variety of readers. Unfortunately, these two goals – accuracy and accessibility – often come into conflict. Statistics, poll results, and research findings are difficult to discuss accurately without dwelling on technicalities that some readers find cumbersome and unnecessary. For other readers, these details add value to the *Data Book*.

To address this issue, we have added this Data Appendix to the *2010 Data Book*. In the main chapters of the book, we have tried to improve clarity and readability by limiting details that will not be of interest to general readers. Readers curious about the nuts and bolts of the data (sources, methods, and limitations, for instance) can now find this information in the Appendix.

Brain Development

The Brain Development chapter is meant to be a concise introduction to early brain development from conception to age three. It is based on the most recent research and is thoroughly documented. The information on brain anatomy is almost universally accepted in the sciences. To avoid excessive clutter in the text, we chose not to include endnotes for every reference to this basic body of knowledge. Unless otherwise cited, such information comes from the first three sources in the reference list below.[1-3]

Demographics

The Demographics chapter uses 2008 American Community Survey (ACS) data from the U.S. Census Bureau. ACS data, unlike data from the decennial census, are based upon samples; it is likely that some sampling error is present. However, because the 2010 census is not yet available, the 2008 American Community Survey is the best source for recent population data.

ACS data provides information on Shelby County and Memphis. In the Demographics chapter, we wanted to highlight some of the differences between Memphis and the rest of the county. We obtained "suburban Shelby County" data by subtracting Memphis numbers from Shelby County numbers in the relevant ACS data tables.

2008 American Community Survey data is available at http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=ACS_2008_1YR_G00_&_lang=en&_ts=293964241564

Health

Tennessee Department of Health, Office of Policy, Planning, and Assessment, Division of Health Statistics provided The Urban Child Institute with Birth Certificate Data from 2000-2008, which was used to create many of the charts in the Health domain.

It should be noted that, particularly in Figure 1 and Figure 3, the data reported on Infant Deaths from

2000-2007 in Tennessee and Shelby County were collected from the Tennessee Department of Health, Vital Statistics (available at: http://health.state.tn.us/statistics/vital.htm.) The 2008 Infant Deaths and Infant Mortality Rates are preliminary numbers reported from 2008 Birth Certificate Data.

To obtain the most accurate numbers, linked Birth-Death records should be used. However, this data set is not yet available for 2008. The Urban Child Institute believes that this preliminary data captures nearly all of the infant deaths for 2008 and that the missing data will not significantly influence the raw number or the rate.

Figure 5 in the Health Chapter references the American Community Survey, which we used to calculate the female population between ages 10-19. See the Demographics section of the Appendix for a full description of the American Community Survey.

Breastfeeding

The chapter on Breastfeeding uses results from the 2009 Early Childhood Development Public Opinion Poll. See the Family and Home Environment section of the Appendix for more information about the poll.

Tennessee Department of Health, Office of Policy, Planning, and Assessment, Division of Health Statistics provided The Urban Child Institute with Birth Certificate Data from 2004-2008. This data set is available from the Tennessee Department of Health.

Education

The data on pre-kindergarten education and kindergarten readiness are drawn from reports provided by the Memphis City Schools' (MCS) Office of Evaluation. MCS assesses the impact of its Pre-K program with the Peabody Picture Vocabulary Test (PPVT-III).[6] The PPVT-III measures receptive (comprehended) vocabulary: the examiner says a word, and the child must choose the correct match from a group of pictures. The test is referenced (or "normed") to national standards; the average (50th percentile) score is 100.[7] MCS Pre-K students take the test at the beginning of their preschool year and again at the end of the year.

The Kindergarten Readiness Indicator (KRI) is an instrument created by MCS to measure school readiness in children in their first few days of kindergarten. The KRI consists of a language section and a math section. The numerical score is the number of questions answered correctly; scores range from 0-86 in language and 0-27 in math.[8]

Unlike the PPVT-III, the KRI is not calibrated to national standards. Instead, it is based upon the curriculum that incoming students will encounter in Memphis' kindergarten classrooms.[8] The KRI cannot tell us how Memphis children's readiness for school compares to that of children across the country, since children in other cities take different tests that are not comparable to the KRI. It can, however, be used to make comparisons among MCS students.

The reports used in the Education chapter are available at:

Sell M. Memphis City Schools pre-k program evaluation. Office of Evaluation. Available at: http://www.mcsk12.net/docs/Data/PreK/Pre-K%20Program%20Impact.pdf Accessed on May 26, 2010.

Banks, T. & Sell, M. The effects of pre-k experience on Kindergarten Readiness Indicator scores: 4 year trends. Memphis City Schools Office of Evaluation. Available at: http://www.mcsk12.net/docs/Data/PreK/Effects%20of%20Pre-K%20Experience%20on%20KRI%20Scores%20-%204%20Year%20Trends.pdf Accessed on May 26, 2010

Family and Home Environment

The Family and Home Environment chapter uses data from the Early Childhood Development Public Opinion Poll commissioned by the Urban Child Institute. The poll was conducted in August 2009 by Dr. Wayne Pitts of the Mid-South Survey Research Center (affiliated with the School of Urban Affairs and Public Policy at the University of Memphis).

600 respondents completed the survey. This sample was then weighted to more closely match the demographic makeup of Shelby County. For the Family and Home Environment chapter, we included only those respondents who reported having children (248 of the original 600 respondents). The confidence interval for the results of this subset is 97 percent.[4]

Polls should always be interpreted with caution. Even well designed polls can be affected by question wording, question order, and sampling problems.[5] Our 2009 poll produced an unexpected result: respondents repeatedly affirmed the importance of the brain development that occurs in a child's first three years. However, when asked in a later question to choose which age group is the best target for public investments in learning, most participants chose other ages.

This discrepancy does not necessarily cast doubt on the high level of public awareness suggested by the earlier questions. Introducing the cost factor brings in new considerations; it is not uncommon for poll responses to shift when this happens.[5] In the case of the 2009 poll, however, we should note the possibility that response bias may be an additional reason for the apparent inconsistency.

One form of response bias is the non-attitude. When a respondent does not have a strong opinion or belief about an issue, his or her answer to the question may be influenced by other factors, including the fact that the question was asked.[5] The consistent theme of the poll questions – brain development from conception to age three – may have been a cue that prompted some participants to profess more awareness of this issue than they otherwise would. The later question about public spending – about which everyone has an opinion – may have caused participants to retreat from their overstated position and give an answer more in line with their actual beliefs about education.

This is offered only as one possible interpretation of the poll results. We have no evidence that such bias was involved in the survey. On the contrary, there are several reasons to think that the 2009 poll was of especially high quality. For example, in evaluations submitted by interviewers, 99 percent of completed responses were considered either adequate or high-quality (rather than questionable), and 94 percent of respondents were considered cooperative (rather than indifferent or uncooperative).[4]

One final note about the charts in this chapter: The majority of the poll questions involve parents' reactions to statements about child development. For their answers, parents chose one of five categories: strongly agree, agree, somewhat agree, disagree, or strongly disagree. For most of the charts, we show only the percentage of "correct" answers. That is, if a statement is supported by research, the corresponding chart will show what percentage of parents answered with "strongly agree," "agree," or "somewhat agree." Similarly, if the statement is one that experts consider to be false, we show only how many parents disagreed or strongly disagreed. The percentages in these charts will not add up to 100, since they do not include all responses.

For more information about the 2009 Early Childhood Development Public Opinion Poll, contact The Urban Child Institute.

Community

The community section of the *Data Book* uses a variety of sources – not all of which – are publicly available. For more information on those data please contact The University of Memphis' Center for Community Building and Neighborhood Action.

A full data description of The Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data is available in the Appendix under Health.

Best Practices

The data on the effects of Early Head Start are the product of research conducted by the National Early Head Start Research and Evaluation Project of the U.S. Department of Health and Human Services (DHHS).[9] We found it advisable to use national data rather than test results collected by Porter-Leath. Like many Early Head Start programs, Porter-Leath assesses children's progress using a criterion-referenced test – a test which measures children's mastery of a predetermined set of skills. Criterion-referenced tests are useful for tracking an individual child's progress and identifying developmental delays, but are not well suited for measuring the effects of a program or comparing different programs.

The national DHHS study, by contrast, measures development with norm-referenced tests. Norm-referenced instruments use standards that are based upon the test performance of large and diverse samples.[7] This allows meaningful comparisons between individuals and groups. Additionally, national studies have more resources than local evaluation efforts. Thus, they are more likely to use large samples and to include control groups, leading to more reliable conclusions.[10]

Table 1 below includes the detailed results for the variables discussed in the Best Practices chapter. Cognitive skills were measured using the Mental Development Index (MDI) of the Bayley Scales of Infant Development. The Peabody Picture Vocabulary Test measured language comprehension. For both tests, researchers also examined the percentage of children scoring in the at-risk range (<85). The parenting scores were obtained with the Home Observation Measure of the Environment (HOME).

The effect sizes for Early Head Start participation range from .10 to .14. Generally, effect sizes below about .20 are considered small. But even small effects can be relevant – particularly in intervention studies. Effect sizes of .10 and even lower are often meaningful from a public health standpoint.[11,12] Furthermore, when researchers considered only those programs that had fully implemented the federally mandated standards, effect sizes were higher – up to .23 for parental reading (not shown). Because this was a smaller group, however, many outcomes did not reach statistical significance.[9] Accordingly, we chose to focus on the overall results.

Outcome Measure	EHS Participants	Control Group	Estimated Impact Per Participant (SE)	Effect Size
Bayley MDI Mean Score	91.4	89.9	1.6**(0.63)	.12
Percent of Children With At-Risk MDI Scores	27.3	32	-4.7*(2.43)	-.10
Average PPVT-III Score	83.3	81.1	2.1**(0.88)	.13
Percent of Children With At-Risk PPVT-III Scores	51.1	57.1	6.0**(2.88)	-.12
Percent of Parents Who Read to Their Child Every Day	56.8	52.0	4.9**(2.44)	.10
Percent of Parents Who Spanked Their Child in the Past Week	46.7	53.8	-7.1***(2.49)	-.14

*p < .10

**p < .05

***p < .01

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