



2011 ISSUE 6

DATA BOOK

The State of Children
in Memphis and Shelby County



www.theurbanchildinstitute.org



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The Urban Child Institute 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 vision 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 place of choice for expertise, advice, and collaboration for those who want to improve the lives of children in Memphis, Tennessee.

Data Book Purpose

The State of Children in Memphis & Shelby County was created by The Institute and first published in 2006. The initial purpose was to collect the best available data on children in our community. Many individuals and organizations were gathering important information on children, but the 2006 “Data Book” was the first time that the data had been assembled in a single document.

This 2011 volume continues to track and update the data. It has also become more focused on our community’s youngest children, specifically those under age three. Additionally, The Institute is excited that the new Data Book includes contributions from some of our community’s top experts in various fields related to children’s well-being.

We hope that the Data Book will be a useful tool for government leaders, service providers, educators, and all community stakeholders who desire positive changes in Memphis and Shelby County. We believe that the evidence it presents for the importance of children’s earliest years provides clear direction for community efforts to improve the lives of our children and the future of our community.

2011 Introduction

The Urban Child Institute's Data Book provides the most comprehensive information available about the state of children in Memphis and Shelby County. It is also a call to action, challenging us to make Memphis known as a city that cares for its children. This year's data should encourage us to redouble our efforts in the battle to give every child in our community a fair start in life.

To do so, we need to invest early. The first three years of life are an especially important period for brain development. During this time, the brain is still organizing itself, and a child's earliest experiences help determine the wiring of his brain. Positive experiences help create strong and efficient connections that form the foundation for more advanced networks that will emerge later. Children's long-term behavioral adjustment, emotional well-being, and academic achievement are based upon skills that are learned before age three.

The figures in the Data Book highlight the challenges that we face, but they also remind us that every one of us has a role to play – government, the faith community, neighborhoods, grassroots organizations and, most of all, families. It is in joining hands that children's issues will be put at the top of the agenda for Memphis and Shelby County.

The 2011 Data Book spotlights key facts that should propel our best efforts:

- Concentrated poverty is spreading and increasing: one in three Memphis census tracts have poverty rates 40% or more
- Too many children aren't ready for kindergarten, a trend exacerbated by the rising rate of children in poverty
- Achievement gaps result from the way children's brains develop
- Shelby County performs poorly on most measures of child health, leaving effects that last a lifetime
- Significant numbers of parents are not fostering optimal development of their children
- For African-Americans, infant mortality is higher today compared to 2000, while for whites it has dropped by one-third
- Teen birth rates for African-Americans have risen slightly since 2002 while dropping 25% for whites
- Risks to the children of teenage mothers begin in the womb
- The relationship between family income and school readiness is not fixed: many children do better than demographics would suggest

The good news is that we know what works: getting the youngest children into Early Head Start and Memphis City Schools pre-K, getting more people into parenting classes, and funding more home visitation programs.

The facts in the Data Book can be complex, but the equation for changing them is simple: Investments and interventions in early child development improve education, build a better workforce, reduce crimes, expand the economy, and build a stronger Memphis.

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Acknowledgments

The Urban Child Institute's *The State of Children in Memphis and 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 The Urban Child Institute's Director of Data Management, Catherine Joyce, M.A. Marc Goodman-Bryan, M.A., Research Associate of The Urban Child Institute served as editor and also contributed a large share of original content. The Institute's Research Associate Rhonda Guinn, M.P.H. provided a wide range of data support and collection.

The Institute is appreciative for domain contributions from several community researchers.

- **Health:** Henry Herrod, M.D., Senior Resident Fellow of The Urban Child Institute
- **Family & Home:** J. Carolyn Graff, Ph.D., Chief of Nursing at the Boiling Center for Developmental Disabilities
- **Education:** Doug Imig, Ph.D., Resident Fellow of The Urban Child Institute, with assistance from Stephanie Donahue, M.S., and Erica Christensen
- **Community:** Phyllis Betts, Ph.D., Director of The University of Memphis Center for Community Building and Neighborhood Action (CBANA) and W. Richard Janikowski, Ph.D., Director of The University of Memphis Center for Community Criminology Research
- **Special Interest- Intimate Partner Violence:** Pamela Connor Ph.D., Professor of Biostatistics and Chair of Epidemiology at The University of Tennessee Health Science Center, Department of Preventative Medicine with assistance from Simonne Nouer, M.D., Ph.D., Nathan Tipton, M.A., See' Trail Mackey, M.C.J., M.P.A., Megan Banet, M.A., and Jennifer Phagan, M.S.
- **Promising Practice:** Kimberly Lamar, Ph.D., Assistant Professor at The University of Tennessee Health Science Center, Department of Preventative Medicine

Special thanks are also due to Juliane Richter from The University of Memphis Center for Multimedia Arts for design and layout.

Additionally, The Institute is appreciative of the work of Tom Jones of Smart City Memphis on the Introduction.

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The 2011 Data Book can be viewed and downloaded at www.theurbanchildinstitute.org.

Permission to copy, disseminate, or otherwise use information from this publication is granted as long as appropriate acknowledgement is given. Suggested citation:

The Urban Child Institute. (2011). *The State of Children in Memphis and Shelby County: Data Book*. Memphis, TN: The Urban Child Institute.



Brain Development

Brain Development: Conception to Age 3

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



Permission to use courtesy of Neighborhood Christian Center.

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).

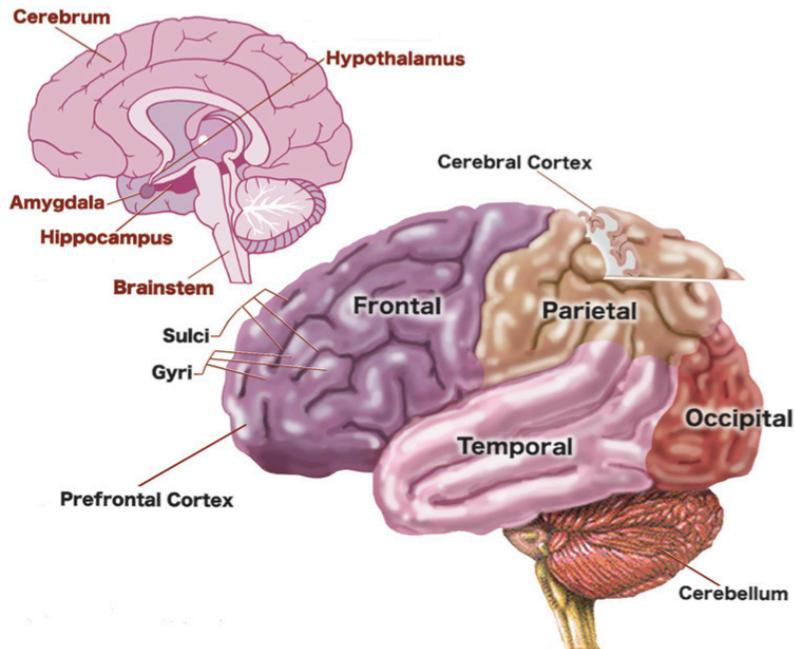


FIGURE 1:
The Human Brain

Source:
Adapted from
Educareer.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 the 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}

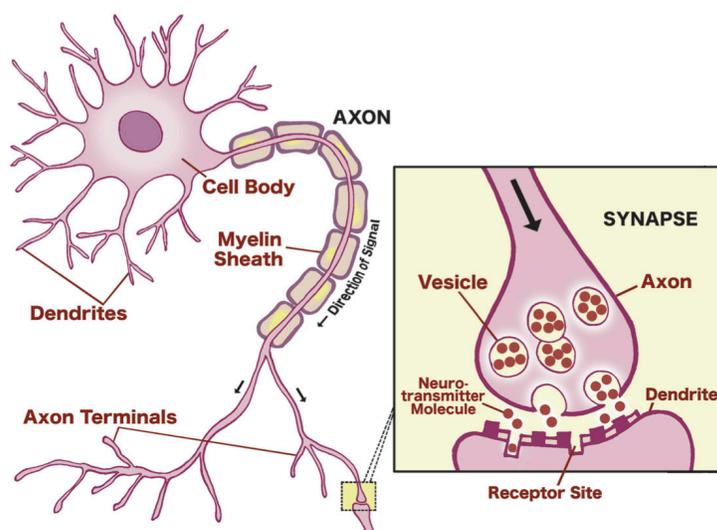
Neurons and synapses form the wiring of the brain.

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.

FIGURE 2:
Communication
Between Neurons

Source: Adapted from
Educareer.org, 2006.



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

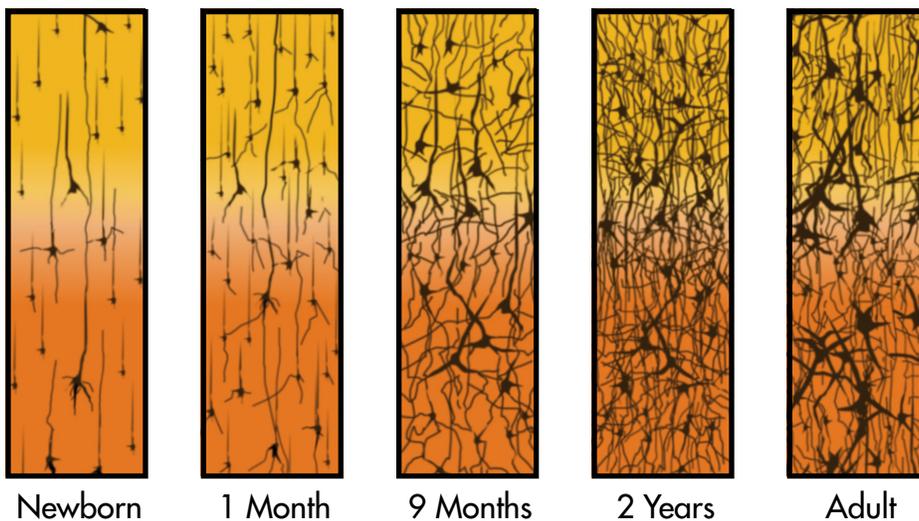


FIGURE 3:
Synapse Density
Over Time

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

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

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.

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.

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}

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Demographics

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

Shelby County has nearly a quarter of a million children. Over 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 and lifelong achievement.



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Improving the well-being of all Shelby County children requires an understanding of these differences 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.

(Note that throughout the Data Book “suburban Shelby County” refers to areas of the county outside of Memphis, while “Shelby County” refers to the county as a whole, including Memphis.)

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.

Figure 2 shows the age distribution of children in Memphis and in suburban Shelby County. Children under five are the largest age group of Memphis children, representing 30 percent of all residents under age 18. In suburban Shelby County, children from ten to 14 are the largest group (Figure 2).

FIGURE 1:
Number & Percent
of Children,
Memphis and
Suburban Shelby
County, 2009

Source: American
Community Survey,
2009, B01001

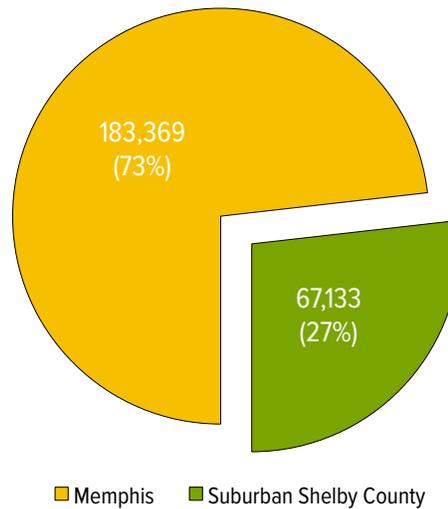


FIGURE 2:
Number & Percent
of Children by Age,
Memphis and
Suburban Shelby
County, 2009

Source: American
Community Survey,
2009, B01001

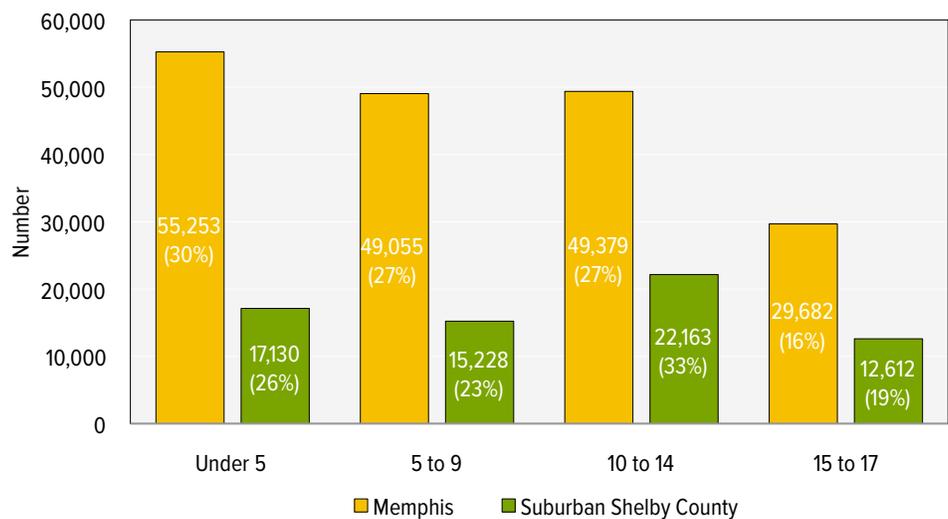


Figure 3 shows the racial/ethnic differences among the child populations of Memphis, suburban Shelby County, Tennessee, and the U.S. A large majority of children in Memphis (about 7 in 10) are black, compared to just over one in four in suburban Shelby County. The Memphis black-white ratio is also different from those of Tennessee and the U.S. The Hispanic

population of Memphis is similar to that of the suburbs and the state.

Memphis children are more likely than their suburban counterparts to live in single parent families. 60 percent of Memphis children live with an unmarried parent, compared to 28 percent in suburban Shelby County (Figure 4).

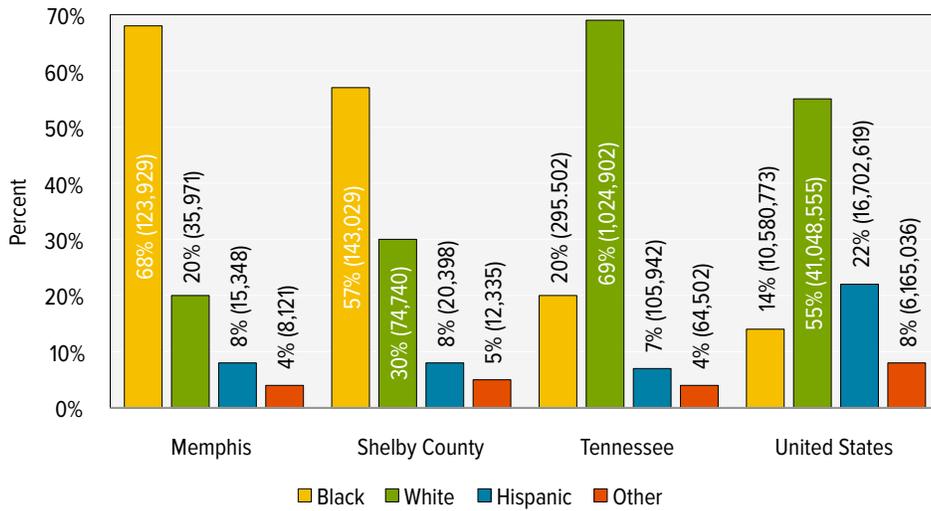


FIGURE 3:
Number & Percent
of Children by Race,
U.S., TN, MSA,
Shelby County,
and Memphis,
2009

Source: American
Community Survey,
2009, C01001B,
C,D,E,F,H&I

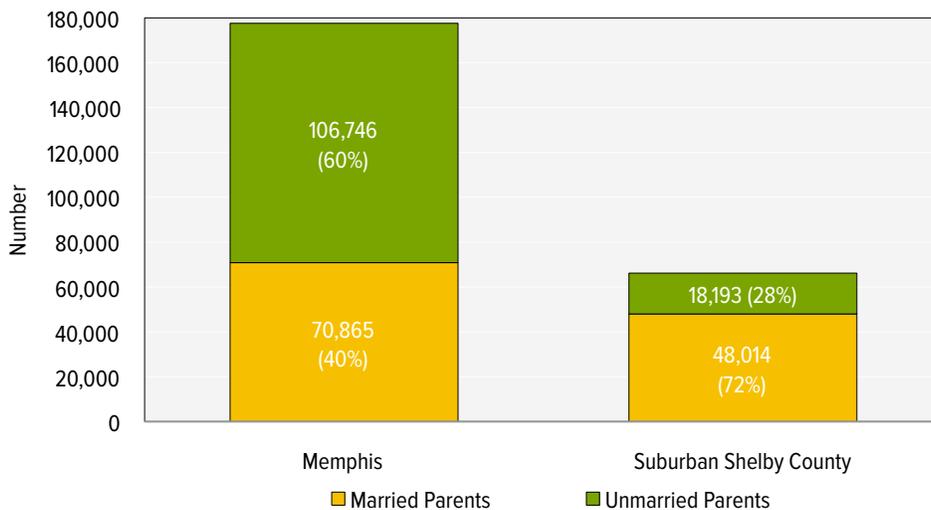


FIGURE 4:
Number & Percent
of Children by
Living Arrangement,
Memphis and
Suburban Shelby
County, 2009

Source: American
Community Survey,
2009, C17006

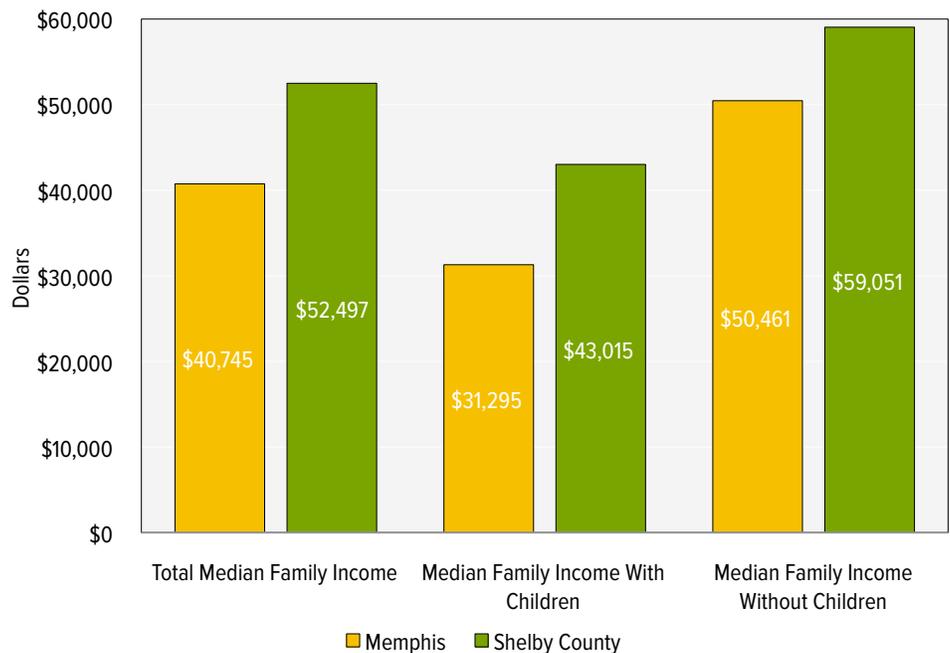
Shelby County families with children make less money than families without children.

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. Too little income, on the other hand, is a cause of stress and can lead to less parental warmth and responsiveness.^{1,2}

Figure 5 shows that across Shelby County, families with children have lower incomes than families without children. The median income of families without children is about \$16,000 more than that of families with children. When we consider only families living within Memphis, the gap is even larger: almost \$20,000.

FIGURE 5:
Median Family
Income by Presence
of Children,
Memphis and
Shelby County,
2009

Source: American
Community Survey,
2009, B19125



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

Housing is typically the biggest item in a family's budget. 30 percent of family income is widely considered an appropriate portion to spend on housing, but poor and low-income families often pay as much as 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}

Figure 6 shows that since 2000, more and more Shelby County families who rent are spending too much of their budgets on housing. The percentages tracked by the yellow line represent the percentage of families each year who pay 35 percent or more of their income on rent. Of these families, almost two-thirds pay 50 percent or more (not shown in graph).

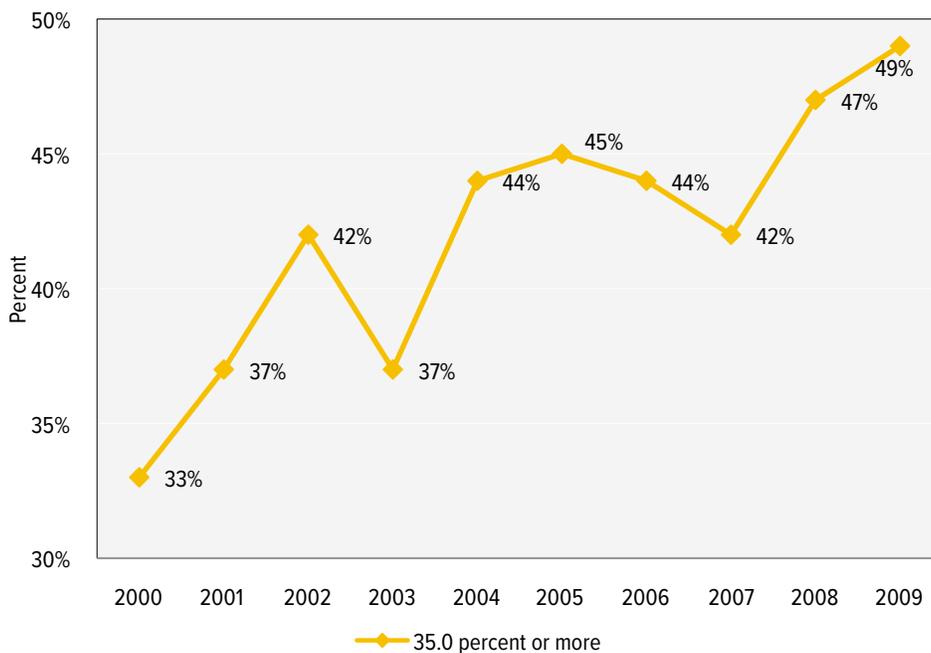


FIGURE 6:
Gross Rent
as Percent of
Household Income,
Shelby County,
2000-2009

Source: American
Community Survey,
2009, 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. FPL for a family of four is \$21,200.

Poverty endangers children’s healthy development.⁵ Poor families experience, on average, more turmoil, violence, and instability than other families. Poor children watch more TV, have fewer books, and are read to less frequently than their better-off peers. 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, they score lower on cognitive measures, and the effects of early poverty often persist into adulthood.⁶⁻⁸

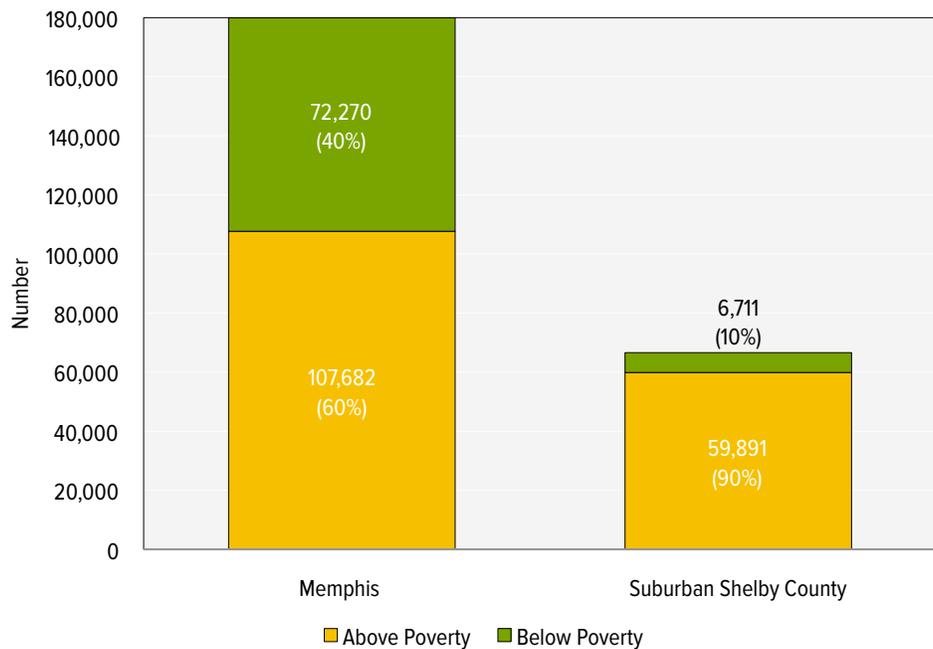
32 percent of all children in Shelby County are in poverty (Figure 9), and over 90 percent of them live in Memphis (not shown). As Figures 7 and 8 show, Shelby County poverty is largely concentrated in Memphis.

- In Memphis, 40 percent of children live in poverty, compared to 20 percent nationwide.
- Ten percent of children in suburban Shelby County live in poverty.

As Figure 8 shows, the percentage of children living in poverty has been relatively steady in Shelby County since 2003, with a slight increase in Memphis.

FIGURE 7:
Number & Percent
of Children in
Poverty,
Memphis and
Suburban Shelby
County, 2009

Source: American
Community Survey,
2009, C17001



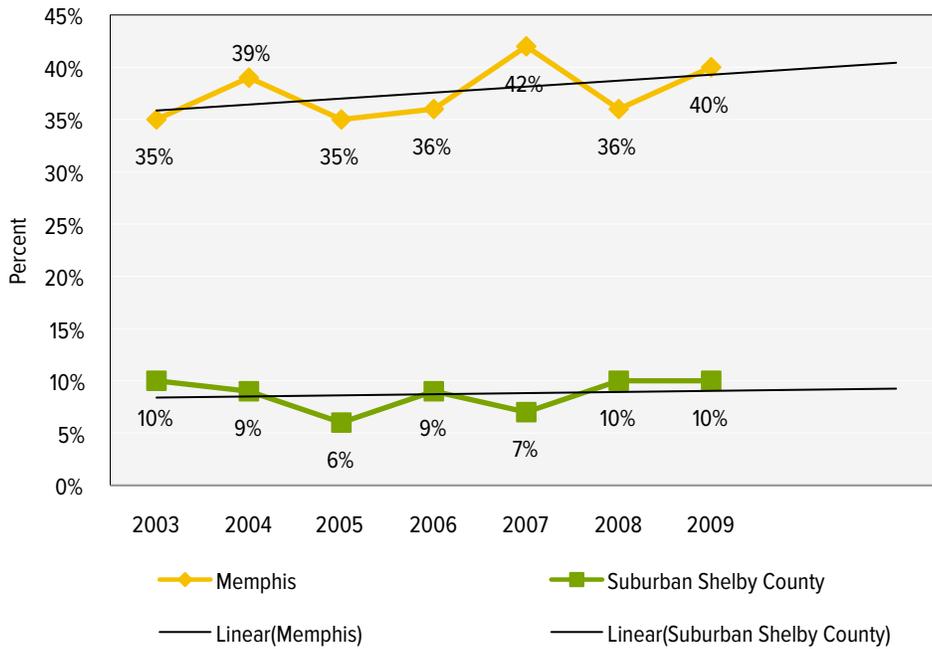


FIGURE 8:
Percent of Children
in Poverty,
Memphis and
Suburban Shelby
County,
2003-2009

Source: American
Community Survey,
2003-2009, C17001

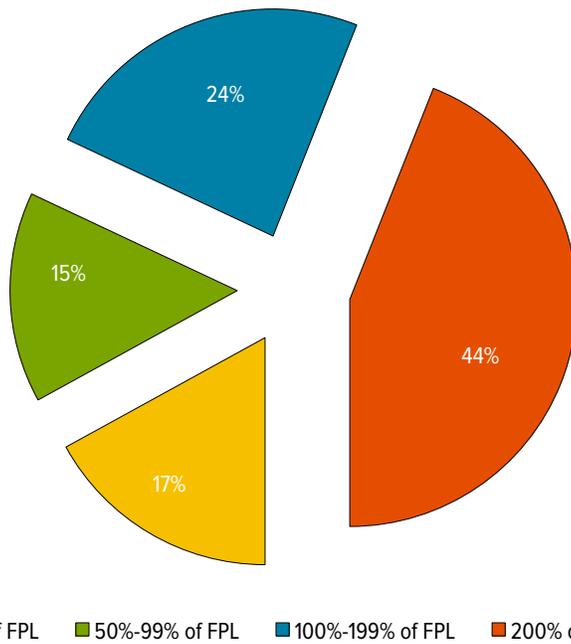


FIGURE 9:
Percent of Children
by Living Standard,
Shelby County,
2009

Source: American
Community Survey,
2009, C17024

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 1960's, 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.⁹⁻¹¹ 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.

More than half of Shelby County's children are disadvantaged (Figure 9).

- Of the 32 percent who are poor, more than half are in extreme poverty.
- 24 percent of children in Shelby County live in low-income families.
- Fewer than half of Shelby County's children are economically secure (at or above 200 percent FPL).

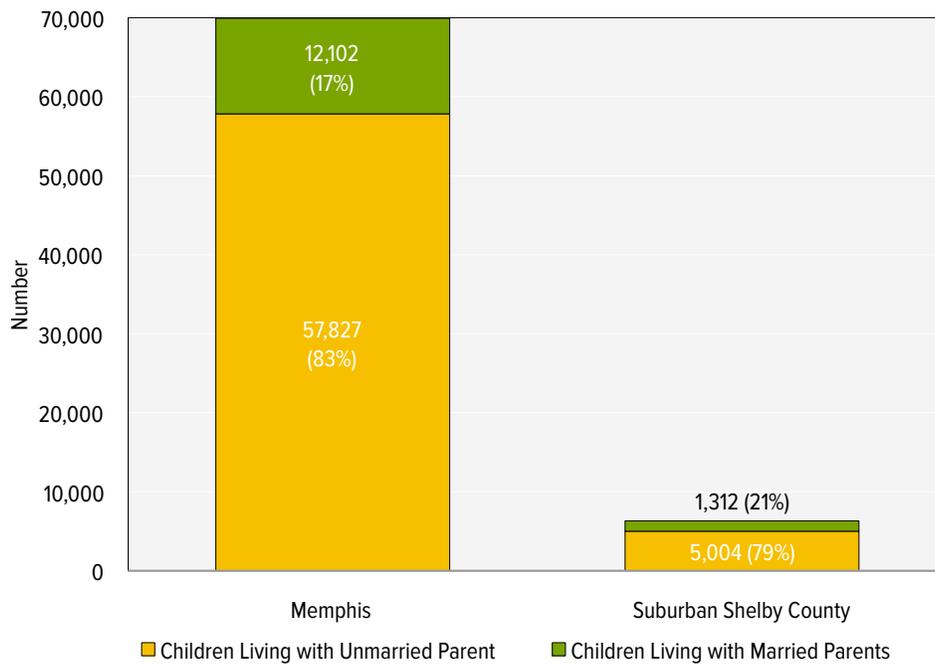


FIGURE 10:
Number & Percent
of Children Living
in Poverty
by Living
Arrangement,
Memphis and
Suburban Shelby
County, 2009

Source: American
Community Survey,
2009, C17006

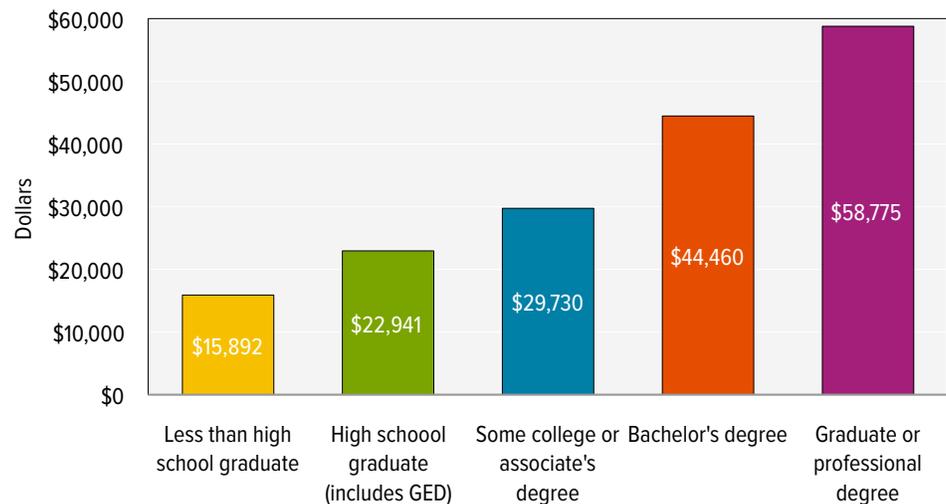
Poverty does not affect all types of families equally.

Where a child lives is not the only factor in how likely she is to live in poverty. Figure 10 shows that children in single-parent and unmarried-parent families are more likely to be poor whether they live in Memphis or in suburban Shelby County. Poverty, along with low social support and high levels of parental stress, places these children at risk for behavioral problems and reduced cognitive outcomes.^{12,13}

- In Memphis, 83 percent of children in poverty live in unmarried-parent families (Figure 10).
- Similarly, in suburban Shelby County, 79 percent of poor children live in unmarried-parent families (Figure 10).

FIGURE 11:
Median Annual
Income by
Educational
Attainment,
Shelby County,
2009

Source: American
Community Survey,
2009, B20004



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 read to their children more often, use larger vocabularies, and have higher expectations for their children. 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 44 percent more than high school dropouts. Attending some college raises a high school graduate's income another 30 percent, and graduating with a four-year degree means another 50 percent increase. A graduate or professional degree adds another 32 percent.

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 is discovering 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}

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

Most Shelby County homes do not have children.

- Only 33 percent of households in Memphis have children younger than 18 years present (Figure 12).
- Only 43 percent of households in suburban Shelby County have children (Figure 12).

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 share of families with children than Memphis. As described above, it also has proportionately fewer children in poverty and children in single parent families. These demographic patterns tend to separate middle-class families from families in need and make it difficult to build a shared identity among parents and caregivers throughout our community.²⁰ The Urban Child Institute acknowledges these challenges and chooses to see them as opportunities for increasing our community's social capital and discovering new ways to improve the well-being of all its children.

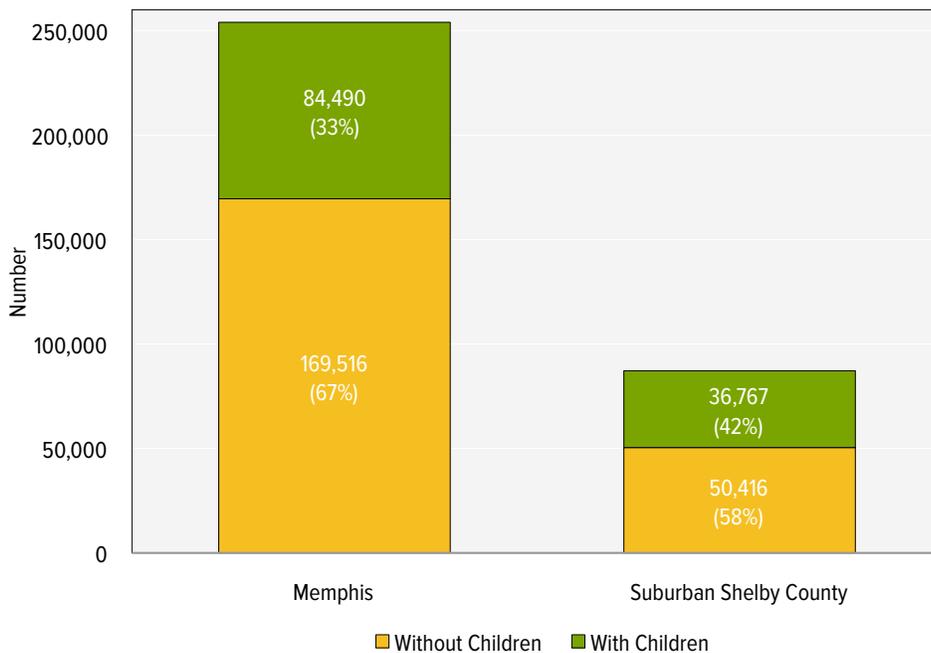


FIGURE 12:
Number & Percent
of Households
by Presence of
Children, Shelby
County, 2009

Source: American
Community Survey,
2009, C11005

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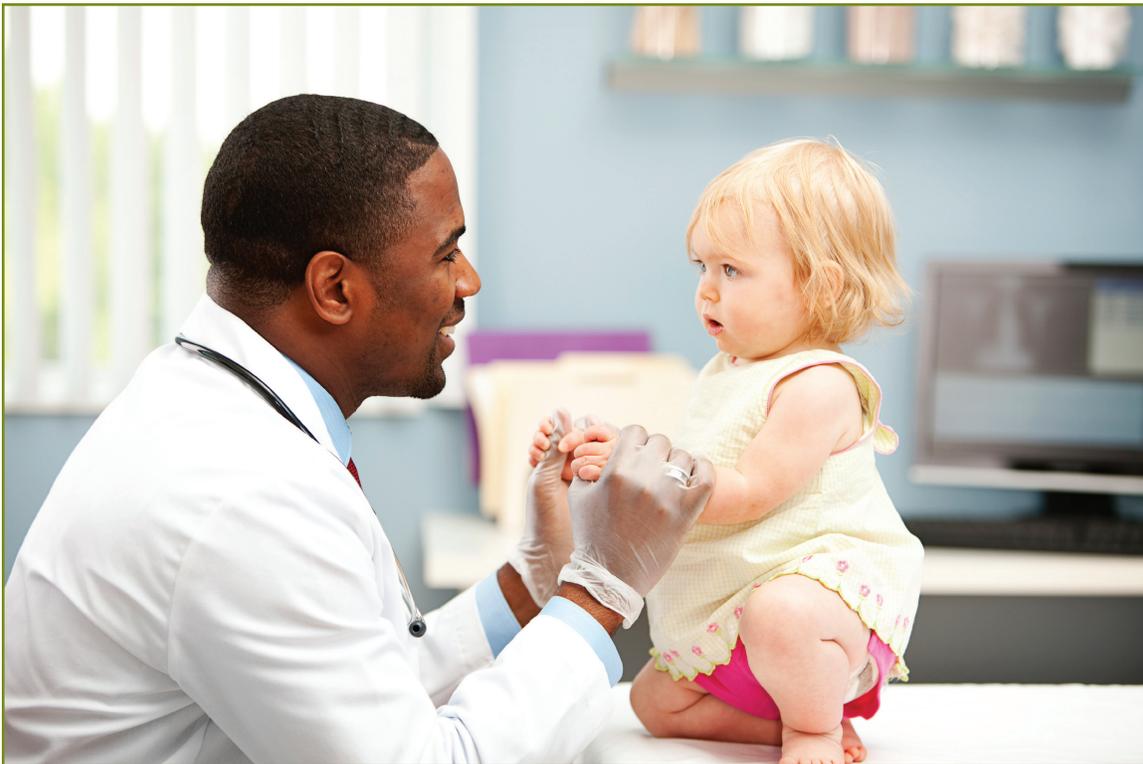
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Health

A community's well-being depends on the health of its children.

Too many of our community's children face health risks from the beginning of their lives. Many of their mothers receive no prenatal care, and prematurity, low birth weight, and infant mortality are disproportionately high in Memphis and Shelby County. The prevalence of poverty, teen parenthood, and single-parent families means that many children grow up without the resources they need in order to thrive.



Shelby County performs poorly on most measures of child health. In the Annie E. Casey Foundation's Kids Count 2010 report, which analyzes state-level information on children's educational, social, economic, and physical well-being, Tennessee ranks 41th of the 50 states, which is an improvement from 2009 when Tennessee ranked 46th. Shelby County, however, continues to perform near the bottom of all Tennessee counties.¹

Too often, the adversity that children face in their first years can have effects that last a lifetime. Early stress and hardship can hinder brain development and set the stage for health problems that may not appear until adulthood.² Poor health is costly for families and communities. This section of the Data Book examines some of the most common risk factors that jeopardize our children's chances for happiness, achievement, and success.

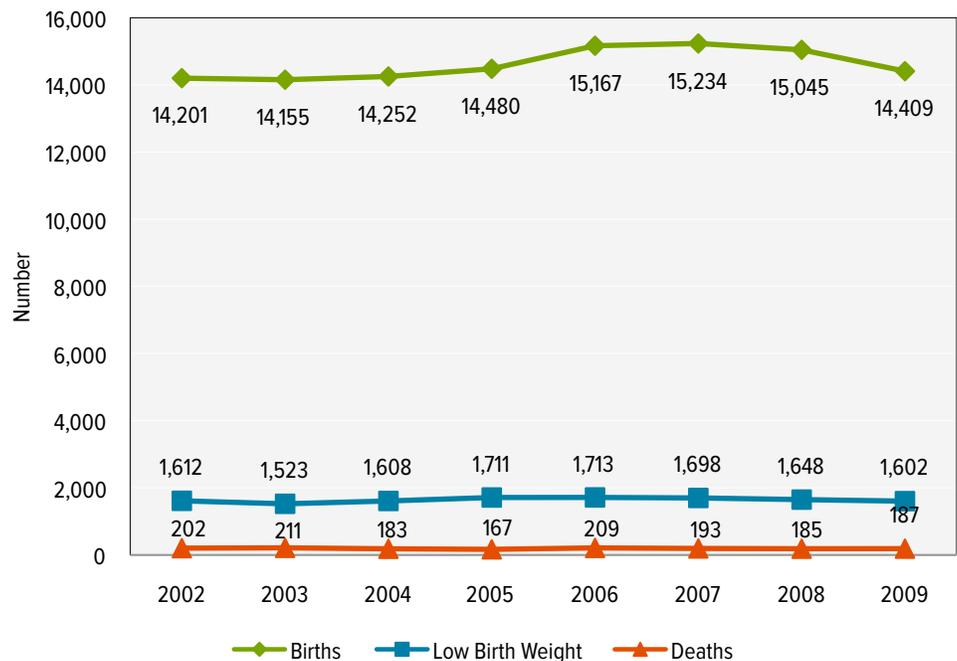
Birth outcomes reflect a community's overall health.

Birth outcomes such as low birth weight (less than 5 lbs. 8 oz.) and infant mortality (death during the first year of life) are a measure of a community's socioeconomic conditions, public health, access to care, and quality of care.³ They also reflect a community's commitment to infants and young mothers. Out of the 14,409 babies born in 2009, 1,602 were low birth weight, and 187 died during infancy (Figure 1).

At first glance, the number of infant deaths and low birth weight births may seem relatively small. However, when compared to national figures, the significance of the problem becomes apparent. The percentage of low birth weight births in Shelby County is 36 percent higher than the most recent available national figure. Infant mortality is more than twice as common in Shelby County as it is nationwide.^{4,5}

FIGURE 1:
Number of Total Live Births, Low Birth Weight Births, and Infant Deaths, Shelby County, 2002-2009

Source: Tennessee Department of Health [TDOH], Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2002-2009



There are large differences in infant mortality according to race.

The infant mortality rate (IMR) is the number of deaths that occur in the first 12 months of life per 1,000 live births. In Shelby County, the IMR among black infants is three and a half times higher than the white IMR (Figure 2). This is of particular concern because black infants represent over half of Shelby County births. Of the 14,409 babies born in 2009, 35 percent were white and 59 percent black.

Prematurity (less than 37 weeks gestation) has been linked to infant mortality, and the higher prevalence of premature births among black women may explain part of the racial disparity in infant deaths. But even among full-term infants the infant mortality rate is 1.74 times higher for black babies than for white babies.⁶

Likewise, differences in education, income, and health behaviors do not fully explain racial disparities in infant mortality.⁷ In fact, college-educated, non-smoking black women have a higher IMR than white women who smoke and did not finish high school.⁶

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

- The 2009 IMR for blacks in Shelby County is slightly higher than the 2000 rate; the white IMR has dropped by a third (Figure 2).
- In 2000, the black IMR in Shelby County was about two and a half times higher than the rate among white infants. In 2009, it was over three and a half times higher (Figure 2).

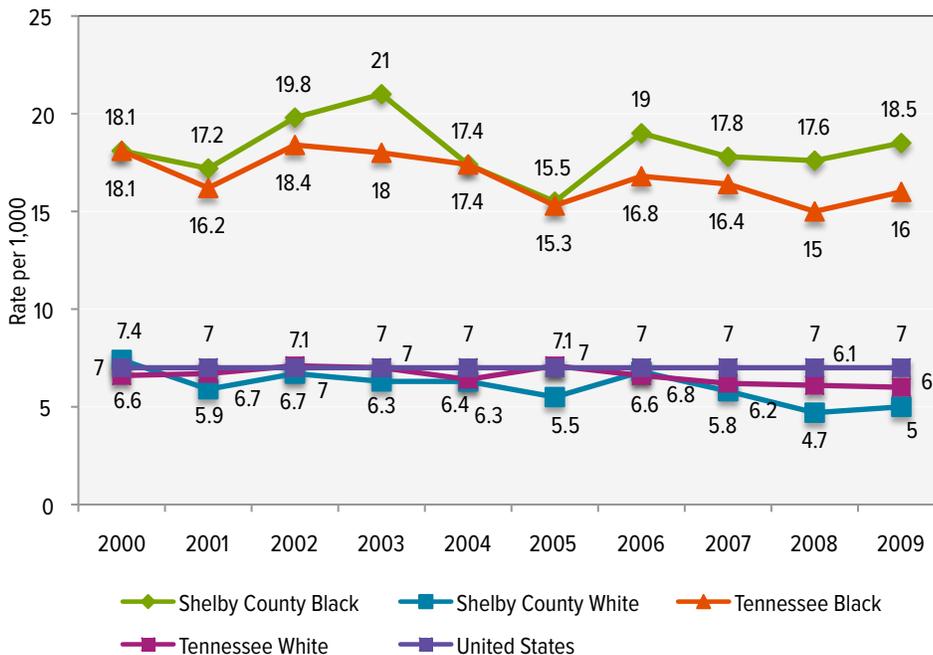


FIGURE 2:
Infant Mortality
Rate/1,000 Live
Births by Race,
Shelby County,
Tennessee and
United States,
2000-2009

Source:
TDOH, 2002-2009

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

Low birth-weight babies face multiple risks, including a greater risk of infant death. Babies with normal birth-weight (at least 5 pounds 8 ounces) have an IMR of 3.3. The IMR for moderately low-birth-weight infants (3 lbs. 5 oz. to 5 lbs. 8 oz.) is 18 times higher. Very low-birth-weight babies (less than 3 lbs. 5 oz.) have an IMR that is 77 times higher than that of normal birth-weight babies.⁶

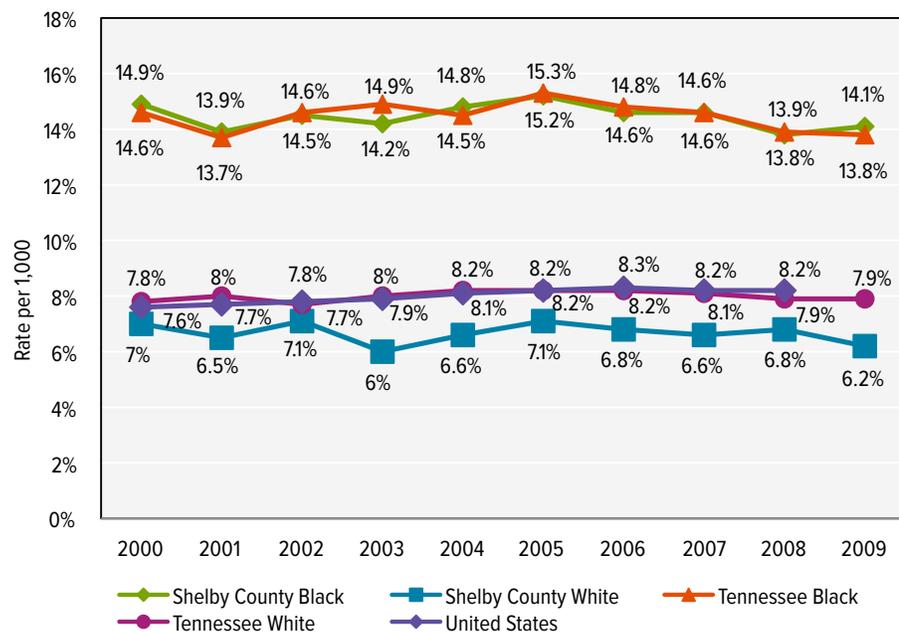
Low birth-weight children who survive are vulnerable to a wide array of health complications and developmental problems.⁸ Low birth weight infants have increased risk of cerebral palsy, respiratory diseases, cognitive delays, and

vision and hearing impairments.⁹ Even when they do not suffer major impairments, there can be long-term effects on their brain development. Studies of adolescents and adults who were born at low birth weight have revealed altered patterns of brain connectivity, especially in language-related areas.¹⁰ Other outcomes include learning difficulties, behavioral problems, and poor physical health.^{11,12}

In both Tennessee and Shelby County, the rate of low birth-weight births has remained relatively constant in recent years. 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 3).

FIGURE 3:
Percent of
Low Birth Weight
Babies by Race,
Shelby County,
Tennessee and
United States,
2000-2009

Source:
TDOH, 2002-2009



Teenage birth rates remain high.

Of the 14,409 births in Shelby County, about 15 percent are to teenage mothers. Since 2002 teenage birth rates among blacks in the County have risen slightly while white teenage birth rates have declined by 25 percent (Figure 4).

Becoming a teen mother is a barrier to educational attainment. Most research shows teen mothers are less likely to complete high school and less likely to attend college.¹³ Some studies find that only 35 to 50 percent of teen mothers earn a high school diploma. Early parenthood also has substantial economic effects for women, placing them at risk for unemployment and poverty.¹⁴

The risks encountered by children of teen mothers begin in the womb:

- Mothers under 20 years old have higher rates of infant mortality than women in their 20's or early 30's.¹⁵
- For babies born to mothers under 15, the IMR is more than twice the overall rate.¹⁵
- Compared to mothers in their 20's or early 30's, teen mothers are more likely to have a premature or low birth weight baby.^{15,16}

Children of teen mothers continue to face risks throughout life. They are more likely than their peers to live in poverty, to have poor health, and to experience inconsistent and ineffective parenting. As adolescents, they are more likely to have behavior problems and to become teen parents themselves.^{17,18}

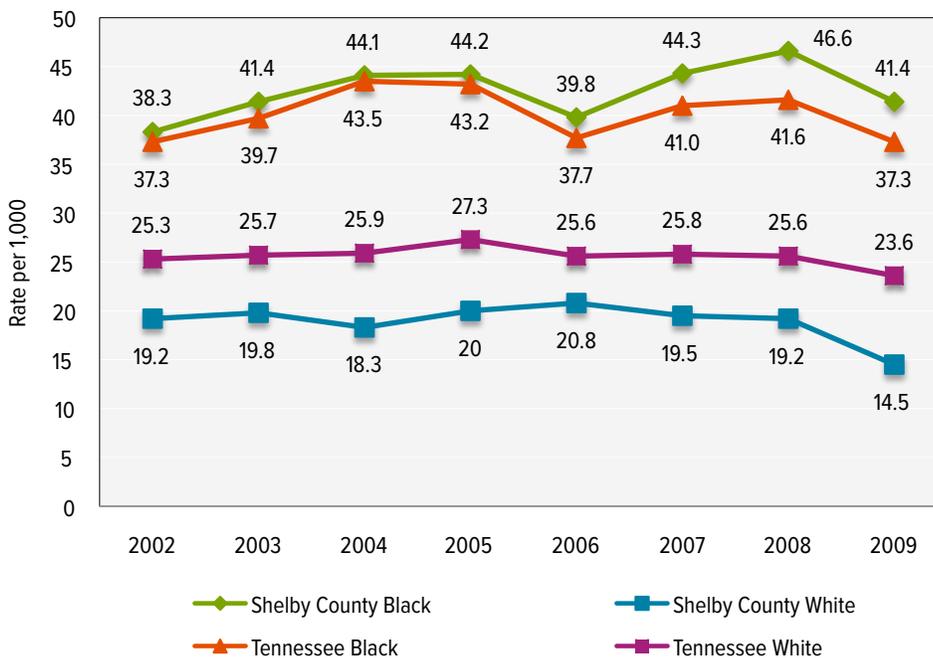


FIGURE 4:
Birth Rate/1,000
Females
Age 10-19 Years,
Shelby County
and Tennessee,
2002-2009

Source:
TDOH, 2002-2009

Births to unmarried mothers continue to increase.

Since 2002, the percentage of births to unmarried mothers has increased in Shelby County (by 15%) and across Tennessee (by 23%) (Figure 5).

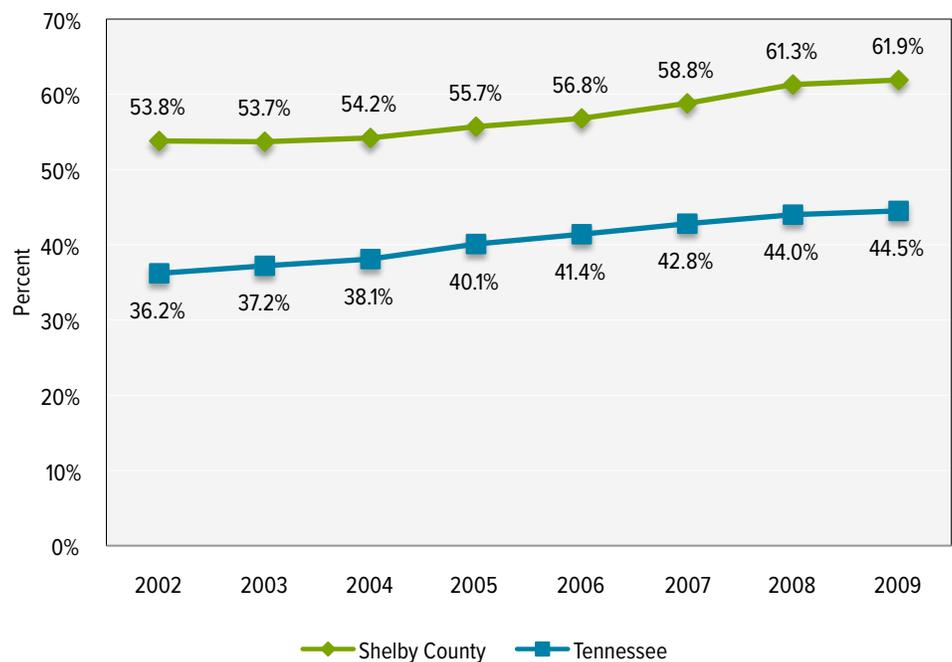
As a group, children of single mothers do not fare as well as other children. It is important to note that the effect of single parenthood decreases after other factors like income, low birth weight, and maternal traits are taken into account.¹⁹ Nevertheless, compared to children of married parents, children of unmarried parents tend to face more developmental risks, even in the first years of life.²⁰

Starting with conception, children of single parents face more health risks than other babies. Their mothers are more likely to smoke while pregnant, to use drugs, and to live in poverty.²⁰

- Single mothers are at increased risk for having a low birth weight birth.⁹
- In Tennessee, consistent with national trends, infants born to unmarried mothers have an IMR that is twice that of infants born to married mothers.¹⁵
- National research shows that they are also more likely to have academic, emotional and behavior problems.¹⁹
- As adolescents, children of unmarried mothers are more likely to become teen parents.¹⁶

FIGURE 5:
Percent of Births
by Unmarried
Mothers,
Shelby County
and Tennessee,
2002-2009

Source:
TDOH, 2002-2009



Smoking during pregnancy endangers a baby's health.

Prenatal smoking is less common in Shelby County than in Tennessee as a whole. The percentage of Shelby County women who smoke during pregnancy is lower than in 2000, while across the state it is higher (Figure 6).

Maternal smoking during pregnancy is strongly associated with low birth-weight, congenital defects, and childhood respiratory disease.²¹

- Even when it does not affect birth weight, prenatal smoking can have negative effects on brain development.²²
- In Tennessee and across the U.S., mothers who smoke during pregnancy have an IMR that is 74 percent higher than that of non-smoking mothers.¹⁵
- Smoking is associated with long-term consequences such as behavioral problems in childhood.²³

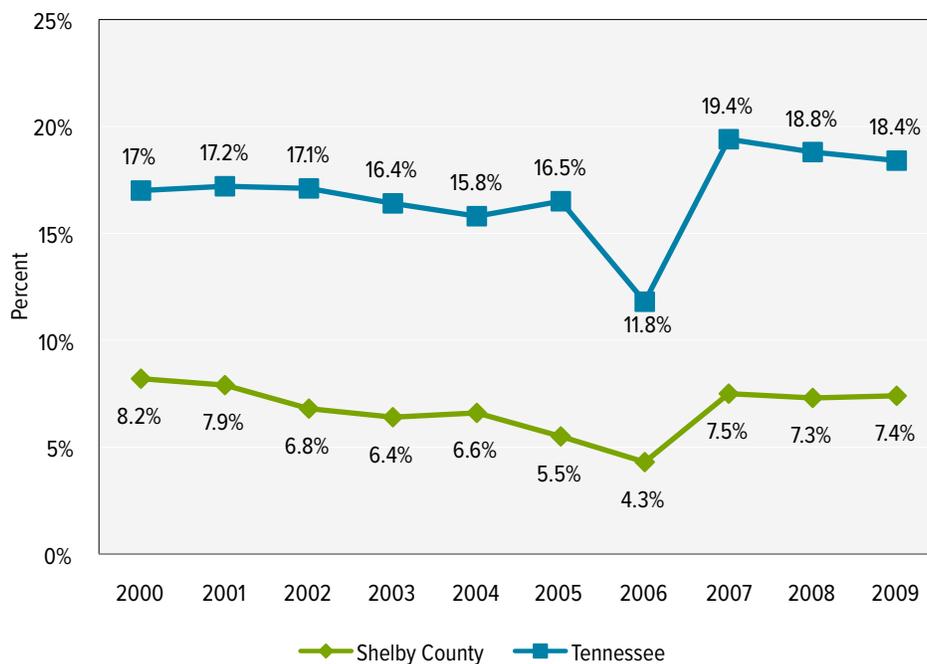


FIGURE 6:
Percent of Mothers
Who Reported
Smoking during
Pregnancy,
Shelby County
and Tennessee,
2000-2009

Source:
TDOH, 2000-2009

Prenatal care improves maternal and child health.

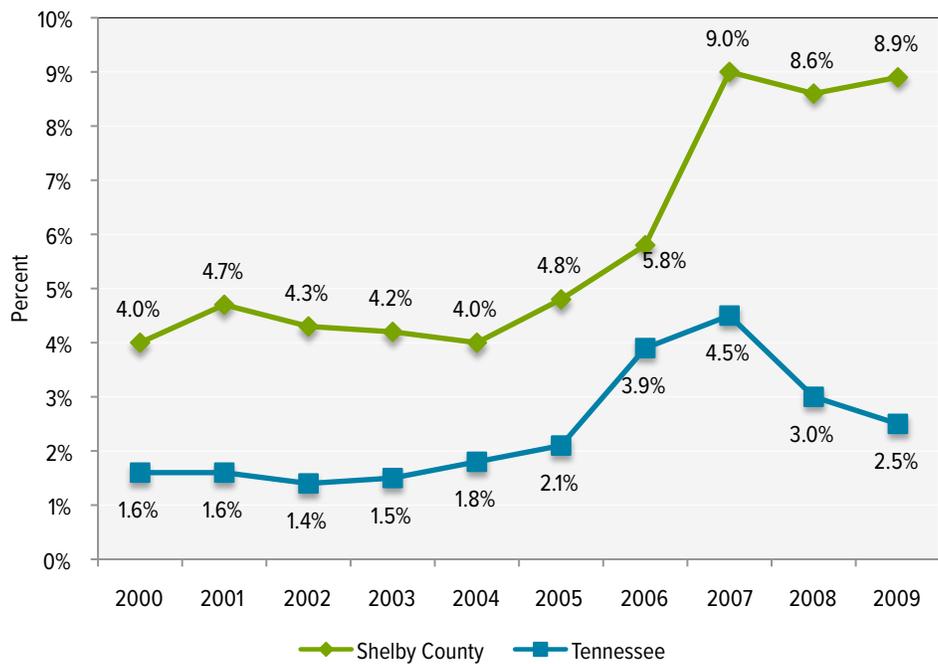
Timely prenatal care is important for the health of mothers and their babies, and may contribute to a reduction in infant mortality and low birth weight.²⁴ Prenatal care should begin in the first trimester, and for a full-term pregnancy should include 10 to 14 visits.²⁵

In recent years there has been a decline in prenatal care in Shelby County. Fewer mothers are receiving adequate care, and more mothers are receiving no care at all before their baby's birth. Consistent, high-quality prenatal care is essential for monitoring maternal and fetal health, providing mothers with necessary information, and identifying possible risks.²⁵

Figure 7 presents the percentage of Shelby County and Tennessee mothers who receive no prenatal care. Since 2000, the percentage of Tennessee mothers receiving no prenatal care has increased by about 50 percent. In Shelby County, the percentage has more than doubled.

Figure 7:
Percent of Mothers
Who Reported
Having Received
No Prenatal Care,
Shelby County
and Tennessee,
2000-2009

Source:
TDOH, 2000-2009



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

The percentage of mothers who gained 50 pounds or more during pregnancy increased 27 percent between 2000 and 2009. An even greater increase (32%) was seen statewide (Figure 8).

- Excessive weight gain during pregnancy is a health risk, especially for a mother who was already overweight.²⁶
- Excess weight gain is associated with labor and delivery complications, preterm birth, and infant mortality.²⁷
- Too much weight gain during pregnancy can result in high infant birth weight, which increases a child's risk of diabetes, cardiovascular disease, and obesity.²⁸

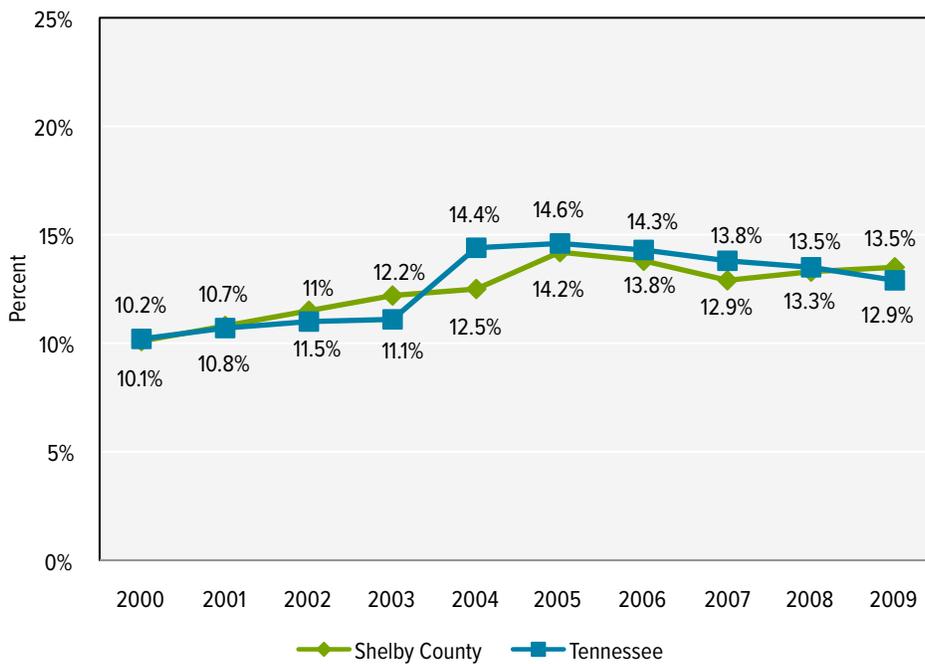


FIGURE 8:
Percent of Mothers
Who Gained 50 lbs.
or More During
Pregnancy,
Shelby County
and Tennessee,
2000-2009

Source:
TDOH, 2000-2009

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Family & Home Environment

The first years of life are the foundation for later well-being.

Infants begin their lives with amazing abilities that serve as the foundation for their health and development throughout childhood and into adulthood. Every part of the child's body is growing and developing. Health and development are intertwined from the moment of conception so that addressing the developmental needs of young children is just as important for physical and mental well-being as it is for preparing the child to succeed in school.¹



Permission to use courtesy of Neighborhood Christian Center.

Particularly important is the growth that occurs in the child's brain. During the first three years of life, the brain is more influenced by a child's experiences than it will be later in development. Because young children are amazingly receptive to their environment, early childhood experiences are the foundation for later abilities. Children develop increasingly complex skills by building on their previous skills. A strong foundation increases the likelihood of positive outcomes; a weak foundation increases the likelihood of problems with learning, behavior, and health.^{2,3}

Early relationships influence how children grow and develop.

From the beginning, infants have a built-in capacity to be social and engage with others. They send non-verbal messages or cues to indicate that they want attention, need a rest, or feel distress.⁴ How parents and caregivers respond to these cues has long-term effects on a child's emotional development. For example, when a parent responds to a baby's crying, the baby learns that the environment is safe and nurturing, and that care and attention will come promptly when needed. Being held, gently touched, and quietly talked to can show infants that they are safe, loved, and important. Infants whose needs are met feel safe and learn to trust

their parents and caregivers. This security promotes emotional development and creates the foundation for trusting relationships to come.⁵

How parents respond to their children's cues is also important for cognitive development. When parents are sensitive to children's signals, they naturally encourage learning by tailoring activities that are challenging but manageable. This is known as scaffolding.⁶ As they become more mobile and more independent, having an attentive parent nearby comforts a child in new or challenging situations and provides a secure base from which he can explore with greater confidence. Parental sensitivity and scaffolding during infancy and early childhood promote cognitive development throughout later childhood.⁷

Postpartum depression is a health risk for mothers and their babies.

Positive parenting is especially important during a child's first few years.⁸ Hardships such as financial difficulties, stress, lack of support, and poor health reduce parents' emotional resources and make it difficult for them to adjust to the demands of parenting. Because risk factors like these can affect parenting quality, they can also affect children's early development.

One widely studied risk factor is postpartum depression, the most common medical complication of childbirth.⁹ Many women—about 70 percent—experience brief depressive symptoms shortly after giving birth. Often called “baby blues”, these feelings usually subside after about two weeks. Postpartum depression, by contrast, is a persistent and serious disorder affecting 10 to 20 percent of new mothers. Symptoms include insomnia, crying spells, poor appetite, and feelings of guilt and hopelessness.^{10,11}

Research has repeatedly found that adolescent mothers, African-American mothers, low-income mothers, and mothers with low education are at increased risk for postpartum depression.^{10,12} Other risk factors include low self-esteem and lack of social support. Similarly, women who remember their own parents as unresponsive or neglectful are more likely to experience depression when they become parents themselves.¹³

If left untreated, postpartum depression can impair a mother's ability to provide the positive interactions that her baby needs. Research has linked maternal depression during infancy with parenting styles that are either withdrawn and uninterested or harsh and impatient.¹⁴ Mothers who are depressed may not be emotionally available to their children and may be insensitive to their child's cues. Depressed mothers have been found to play less often with their infants and engage in fewer activities to promote child development than mothers without depression.¹⁵

Maternal depression affects children's brain development and emotional health.

Infants of depressed mothers are at risk for cognitive and social difficulties that can appear as early as two months. They tend to be less active, to make less eye contact, and to engage in more negative behaviors than other babies.¹⁶ They are also at risk for depression, with symptoms sometimes appearing by four months.¹⁷ Long term effects have also been documented, including emotional instability, conduct problems, and mental health disorders.¹¹ Recent research has discovered distinct neurobiological patterns associated with maternal depression. For instance, brain activity and stress hormone levels are measurably different in children of depressed mothers.¹⁴

Maternal Depression and Parenting Style among Shelby County Mothers

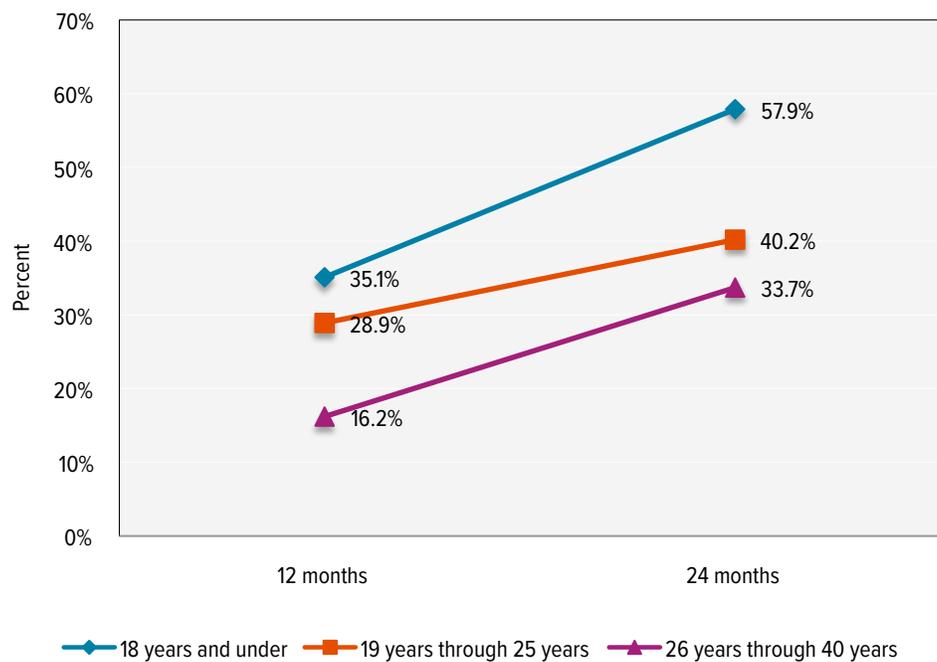
In a study¹⁸ of Shelby County mothers and their young children, mothers' parenting styles were observed as they taught their children to play with a new toy. 561 mother-child pairs were observed when the child was 12 months old and again at 24 months. Interactions were coded according to a widely accepted rating scale measuring effective parenting behaviors such as responsiveness and sensitivity. 22.5 percent of mothers at 12 months and 39 percent of mothers at 24 months scored in the At Risk range, indicating that their parenting styles were not fostering optimal development.

Consistent with previous research, there were large variations according to mothers' age, education, and race:

- Younger mothers were more likely to score At Risk at both 12 months and 24 months (Figure 1).
- At both time points, mothers with a college or graduate/professional degree were less likely to score At Risk than mothers with less education (Figure 2).
- Black mothers were more likely to score At Risk than white mothers at both 12 months and 24 months (Figure 3).

FIGURE 1:
Percent of Mothers
Who Scored At Risk
on Mother-Child
Interaction Scale
at 12 Months and
24 Months by
Maternal Age.

Source:
The Urban Child
Institute & University
of Tennessee Health
Science Center.
Conditions Affecting
Neurocognitive
Development and
Early Learning (CANDLE)
data, 2011.



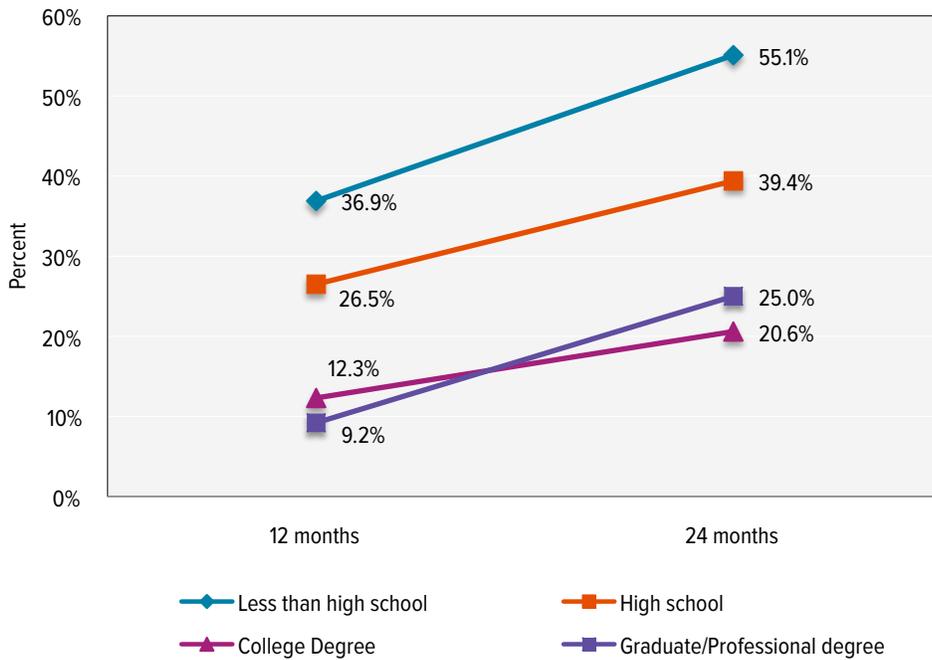


FIGURE 2:
Percent of Mothers Who Scored At Risk on Mother-Child Interaction Scale at 12 Months and 24 Months by Maternal Education

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.

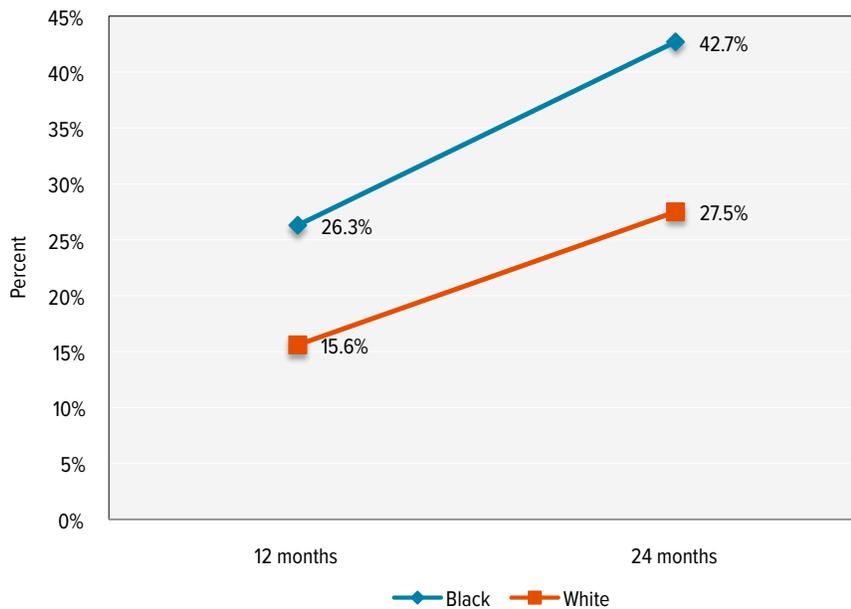


FIGURE 3:
Percent of Mothers Who Scored At Risk on Mother-Child Interaction Scale at 12 Months and 24 Months by Maternal Race

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.

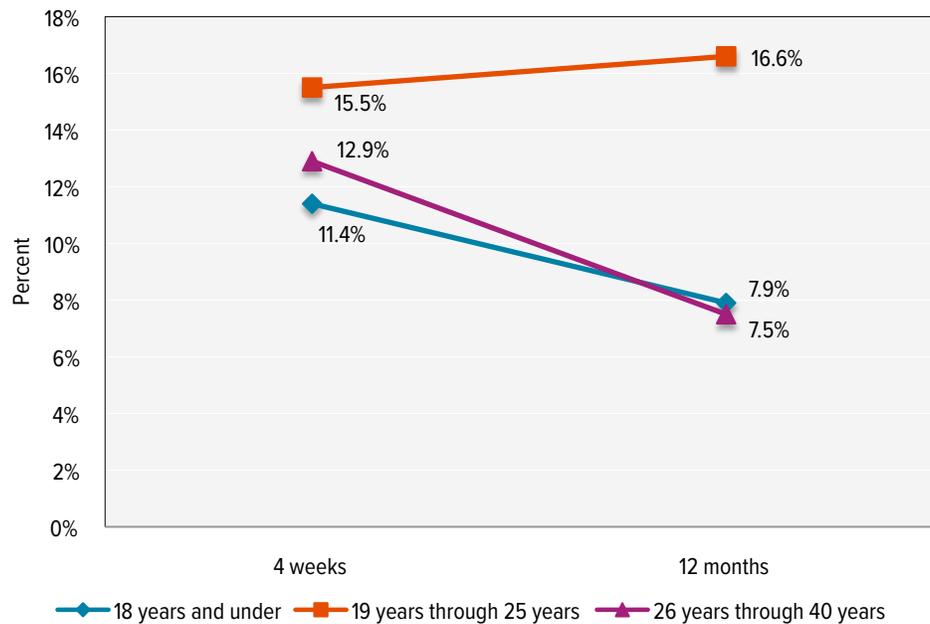
Mothers also completed a brief assessment to determine their risk for postpartum depression. At 4 weeks after birth and again at 12 months, they answered a brief questionnaire designed to screen for possible depression. At 4 weeks, 13.8 percent of all mothers scored At Risk. At 12 months, 11.2 percent scored At Risk. While not an actual diagnosis, an At Risk score indicates that a mother is likely to be suffering from postpartum depression and that further assessment is recommended.

Consistent with past research, depression risk scores varied by age, education, and race:

- At both assessments, 19-25-year-old mothers were more likely than other mothers to score At Risk. Additionally, the likelihood of risk increased from 4 weeks to 12 months for 19-25-year-olds, while it decreased for the other two age groups (Figure 4).
- Mothers with a college or graduate/professional degree were less likely to be at risk for depression than mothers with less education. Risk levels decreased from 4 weeks to 12 months for more educated mothers and increased slightly for mothers with a high school education or less (Figure 5).
- Black mothers were more likely than white mothers to be at risk for depression at 4 weeks and at 12 months. The percentage of At Risk scores decreased for both groups between the first and second assessments, but the gap between white and African American mothers increased, with African American mothers now more than twice as likely to be at risk (Figure 6).

FIGURE 4:
Percent of Mothers
Who Scored At
Risk for Depression
at 4 Weeks
and 12 Months
by Maternal Age

Source:
The Urban Child
Institute & University
of Tennessee Health
Science Center.
Conditions Affecting
Neurocognitive
Development and
Early Learning (CANDLE)
data, 2011.



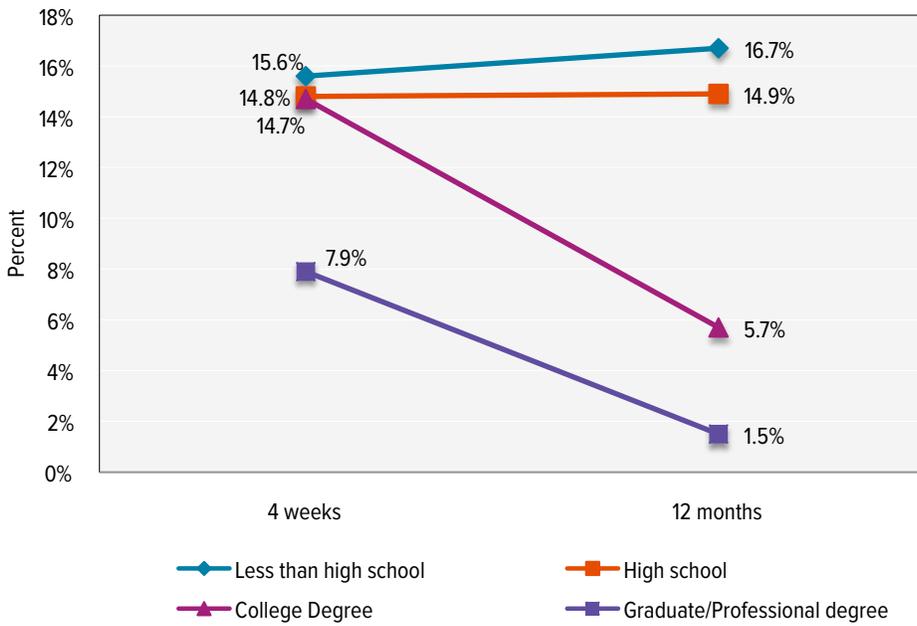


FIGURE 5:
Percent of Mothers Who Scored At Risk for Depression at 4 Weeks and 12 Months by Maternal Education

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.

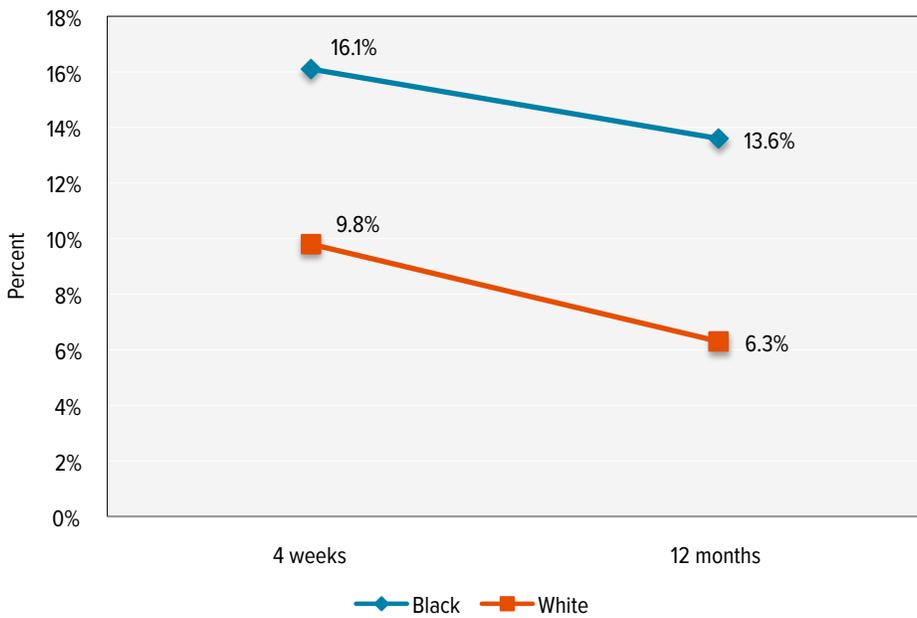


FIGURE 6:
Percent of Mothers Who Scored At Risk for Depression at 4 Weeks and 12 Months by Maternal Race

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.

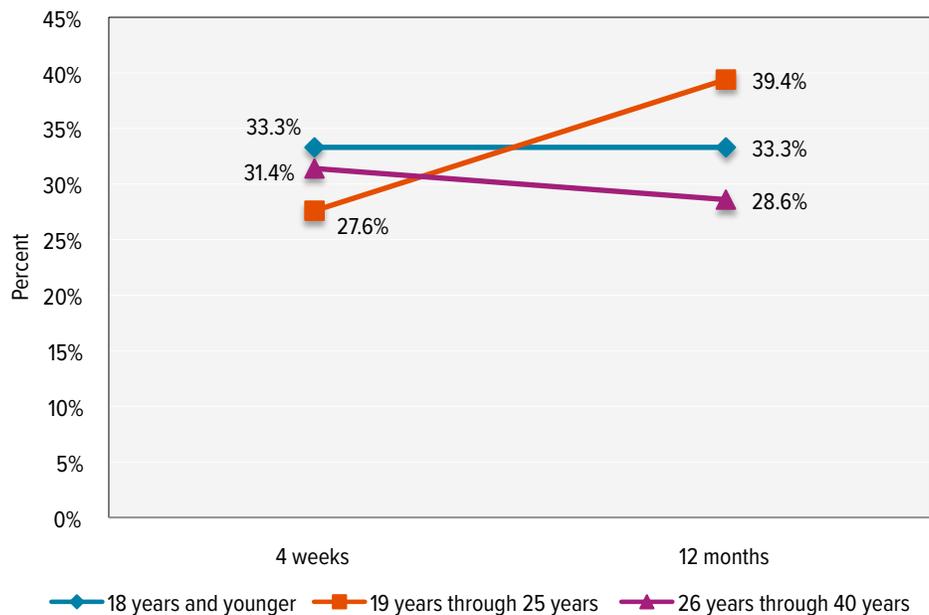
The current study also examined how mother-child interactions related to maternal risk for depression. Among mothers who scored At Risk for depression at 4 weeks, 30 percent also scored At Risk on the 12 month interaction assessment. Among mothers who scored At Risk for depression at 12 months, 35 percent also had At Risk interaction scores.

For mothers at risk for depression, there were variations in mother-child interaction quality:

- Among mothers who scored At Risk for depression at 4 weeks, those who were 18 and younger were slightly more likely to have at-risk interactions with their infants at 12 months. Among mothers who were at risk for depression at 12 months, 19-25-year-old mothers had the highest percentage of At Risk interaction scores (Figure 7).
- Surprisingly, mothers with less than a high school education had the lowest percentage of At Risk interaction scores among mothers with depression risk at 4 weeks. If they had depression risk at 12 months, however, they were almost three times more likely to have At Risk interaction scores (Figure 8).
- Mothers with a college degree showed the opposite pattern: those with depression risk at 12 months were less likely to have At Risk interaction scores than those with depression risk at 4 weeks (Figure 8).
- Black mothers had a higher percentage of At Risk scores for mother-child interactions at 12 months among mothers with depression risk at 4 weeks. For mothers who were at risk for depression at 12 months, interaction scores were similar, with white mothers slightly more likely to score At Risk (Figure 9).

FIGURE 7:
Percent of Mothers Who Scored At Risk on Mother-Child Interaction Scale at 12 Months and 24 Months by Maternal Age (among mothers with depression)

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.



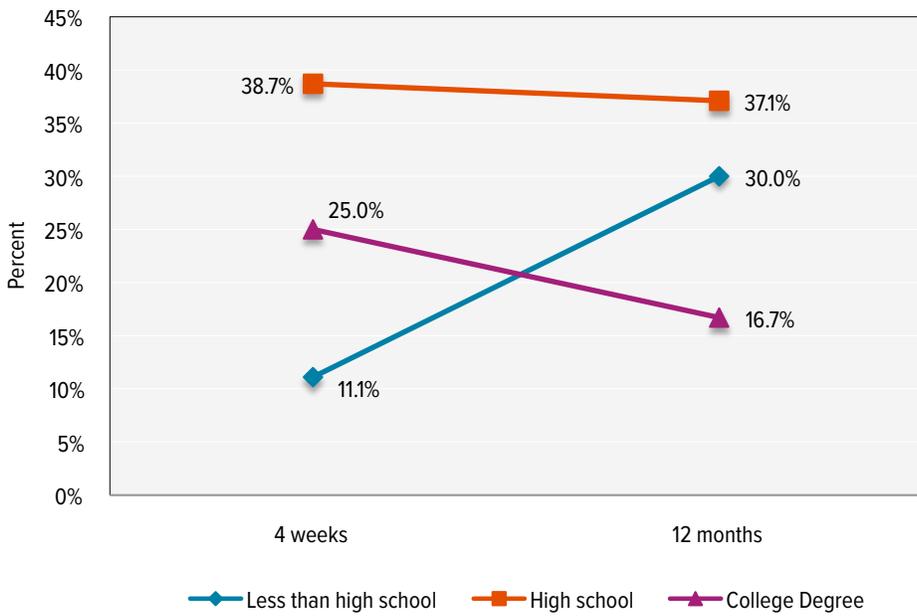


FIGURE 8:
Percent of Mothers Who Scored At Risk on Mother-Child Interaction Scale at 12 Months and 24 Months by Maternal Education (among mothers with depression)

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.

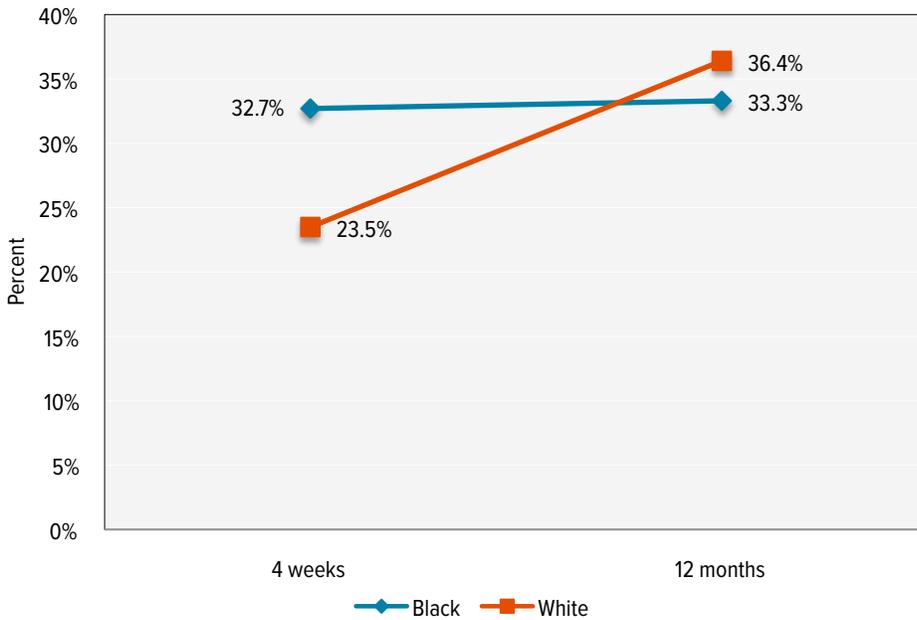


FIGURE 9:
Percent of Mothers Who Scored At Risk on Mother-Child Interaction Scale at 12 Months and 24 Months by Maternal Race (among mothers with depression)

Source:
The Urban Child Institute & University of Tennessee Health Science Center. Conditions Affecting Neurocognitive Development and Early Learning (CANDLE) data, 2011.

Improved screening and treatment can better protect children against the developmental threats associated with maternal depression.

Most women suffering from postpartum depression do not seek help. This may be due to scheduling difficulties involved in caring for a newborn baby, the stigma of mental illness, or a lack of motivation caused by the depression itself.¹¹ In many cases, the disorder remains undiagnosed and untreated, despite the existence of effective treatments. Many antidepressant medications are considered safe for breastfeeding mothers. Psychotherapy is another option with proven results.^{10,19}

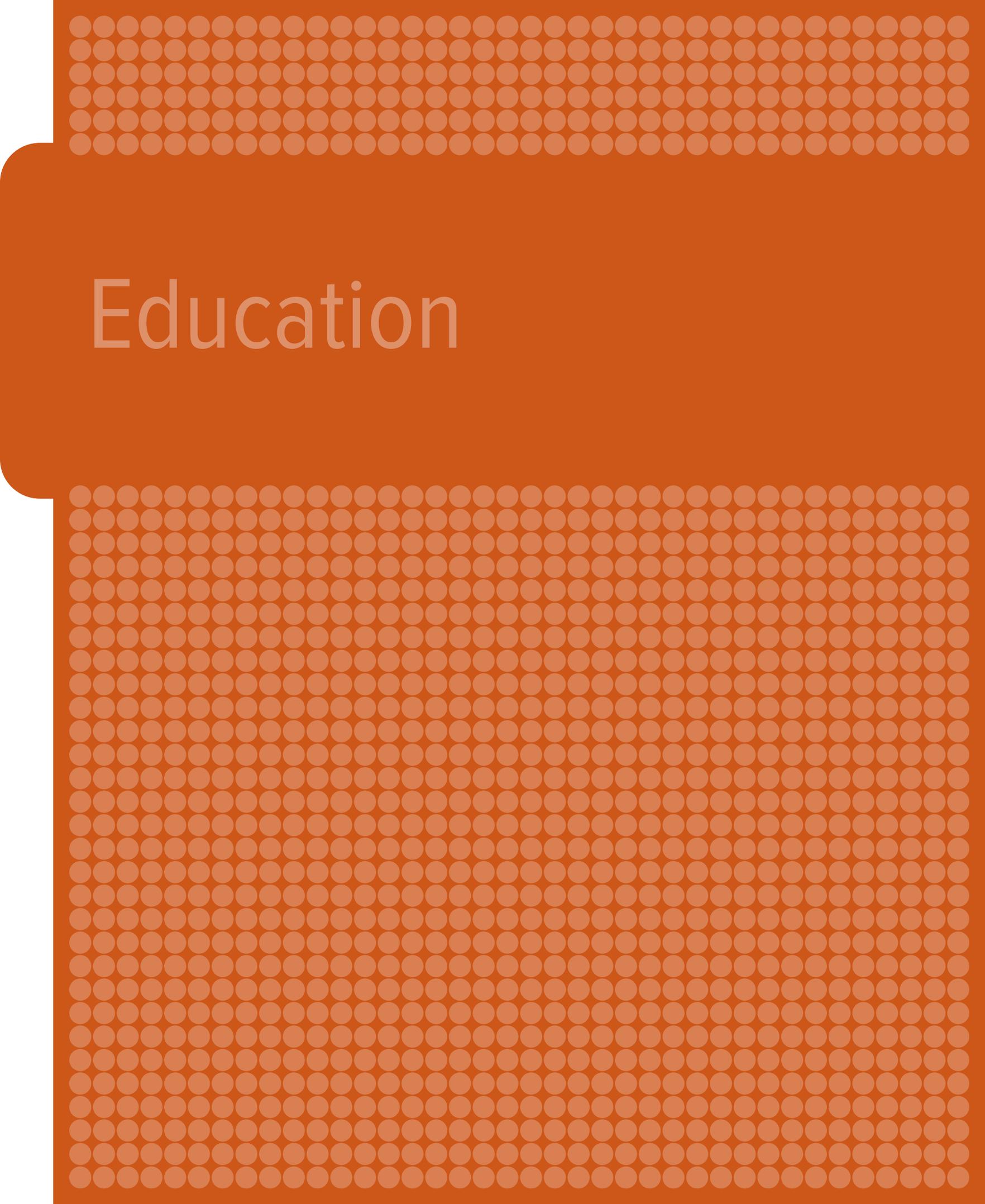
Improving providers' awareness of postpartum depression can help depressed mothers understand their symptoms and seek treatment.¹⁰ There are several brief screening tools that are effective at identifying mothers who may be clinically depressed. These take only a few minutes to administer and have a high success rate. Screening for postpartum depression should be an integral part of routine health care visits for mothers with infants.^{10,11}

Infants and toddlers have fewer coping strategies than older children and are more dependent on their parents. They are more likely, therefore, to experience the negative environment associated with maternal depression.²⁰ Early identification and treatment of postpartum depression is essential for protecting our most vulnerable children during this sensitive period of development.

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Education

School readiness is based upon skills that children learn in their first years of life.

It's often said that parents are a child's first teachers and home is the nation's smallest schoolhouse. Everything that happens in the first few years of life contributes a child's development, and establishes the foundation on which later successes are built. The first three years are vital, for example, in early language development, in the formation of pre-reading and pre-math skills, in symbol and pattern recognition, and in the early development of emotional control and of the social skills that lead to school success.



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Children are expected to arrive at kindergarten able to pay attention for reasonable periods of time, able to resolve conflicts with their classmates in peaceful ways, and able to follow two and three step directions. They also are at an advantage if they bring a familiarity with language and a developing vocabulary, if they are familiar with story telling and enjoy being read to, and if they have some familiarity with letters and numbers. These basic skill sets allow children to participate effectively and raise the likelihood that they will thrive in school and beyond.

Children who enter kindergarten with a strong early foundation of cognitive, behavioral, and social skills generally have higher academic outcomes throughout school. Children who lack this foundation are at higher risk for poor test scores, being held back a grade, being placed in special education classrooms, and dropping out of school.¹ Unfortunately, as is true across the country, many children in Memphis reach kindergarten with major delays in both social-emotional and cognitive development. Research suggests that, nationwide, over one third of children are not prepared when they reach kindergarten.²

Differences in early experiences translate into differences in school readiness.

School readiness is based on skills that children learn in their first years of life. Early experiences during this period have long-term implications for children's later achievement, and differences in readiness among children are largely a reflection of differences in their early exposure to risk factors like poverty.³ Children from low-income families begin school at a disadvantage. Research has shown that on some cognitive measures, children from impoverished backgrounds are already a full year behind their more affluent peers when they first arrive at kindergarten.⁴

A large part of the readiness and achievement gap between different racial and ethnic groups is explained by socioeconomic differences between these groups. There is a strong association between family income and the level of student preparedness for kindergarten: the higher the income, the better prepared the student.^{5,6}

There are many reasons for these differences. Compared to middle-class children, poor and low-income children have fewer books at home and enjoy fewer early learning opportunities. As a general rule, there are also significant differences in language and literacy patterns between low and middle-income households. Middle-class parents tend to engage in more direct conversation with their children. They ask more questions, use a larger vocabulary, and are more likely to offer praise and encouragement.⁷ As a result, there are large socioeconomic differences among young children's language and cognitive development that often become differences in school readiness and academic success.

Beating the odds: Low-income children and school readiness.

Memphis City Schools (MCS) use a measure called the Kindergarten Readiness Indicator (KRI) to help kindergarten teachers understand the level of readiness of incoming kindergarten students. In a recent policy brief from The Urban Child Institute and Memphis City Schools, the authors find a strong correlation between family income and the level of school readiness. In general, the higher a family's income, the better prepared their child will be when he or she reaches kindergarten.

Importantly, this study also indicates that the relationship between income and readiness is not fixed. A significant number of children from poor families and neighborhoods reach kindergarten well prepared. Healthy and developmentally rich early life experiences, such as positive parenting and high-quality early education, can make a profound difference when it comes to the educational trajectory of disadvantaged children.

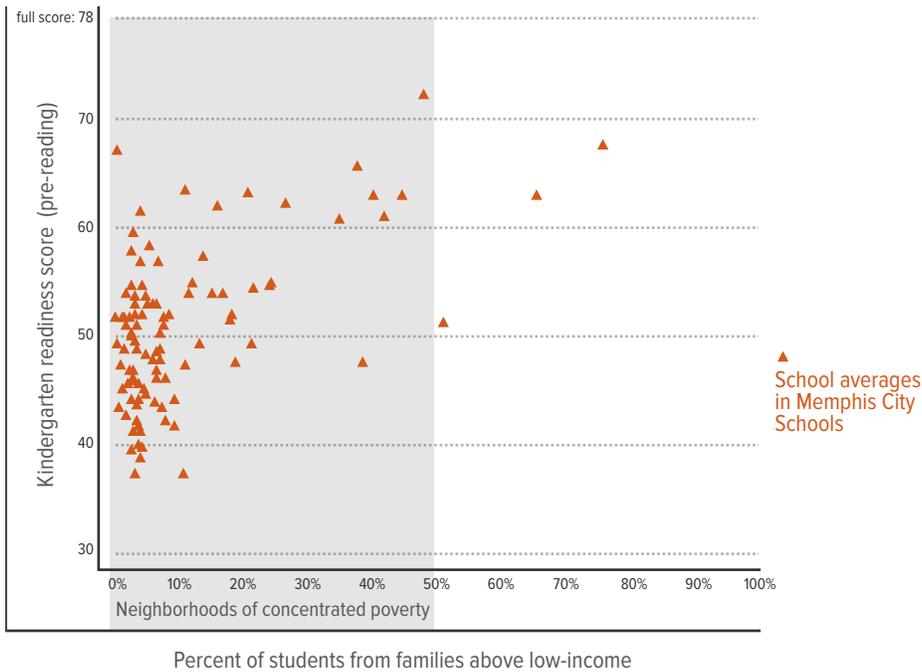


FIGURE 1:
Average School
Kindergarten
Readiness
Indicator by
Poverty

Source:
Sell, M. & Imig, D.
Understanding the
relationship between
family income and
school readiness in
Memphis. 2011.
Available at:
[http://www.tuci.org/
sites/all/files/Readi-
ness.2011-02-18.pdf](http://www.tuci.org/sites/all/files/Readiness.2011-02-18.pdf)

Figure 1 shows the relationship between family income and levels of kindergarten readiness in each Memphis City School. The vertical axis indicates the average KRI reading score of each elementary school (so that the higher the school's position on the graph, the higher the school's average score). Meanwhile, the horizontal axis indicates the percentage of economically disadvantaged children in each school. (Following the federal government's definition, economically disadvantaged students are those children who are eligible for free or reduced-price lunch.) Schools further to the right in the figure have more children from higher-income families. As the graph indicates, schools with higher concentrations of low-income children generally have lower levels of kindergarten readiness.

But even more striking are the differences in levels of school readiness among schools that serve predominantly low-income children. While it's true that the lowest levels of readiness are found among low-income schools, it is also true that some low-income schools receive incoming kindergartners who are extremely well prepared. As the figure suggests, many Memphis children who would traditionally be considered 'at risk' arrive at school prepared to learn.

Quality education before kindergarten prepares children to begin school.

One of the factors that can make a tremendous difference in improving school readiness is the quality of a child's earlier educational experiences. Study after study makes it clear that children who attend a pre-kindergarten program in the year before kindergarten score higher on language and math tests, even after accounting for differences in background factors like race and family income.⁸

A recent and careful evaluation of Tennessee's Pre-K program conducted by researchers from Vanderbilt University offers a clear-eyed assessment of the benefits of pre-kindergarten in Tennessee. In 14 school districts across the state, a standardized test of early language and math skills was administered to a group of children who attended pre-k and to a group of children who did not. Both groups took the test at the beginning of the pre-k year and again at the end of the year. The gains made by pre-k participants were then compared to the gains made by non-participants.

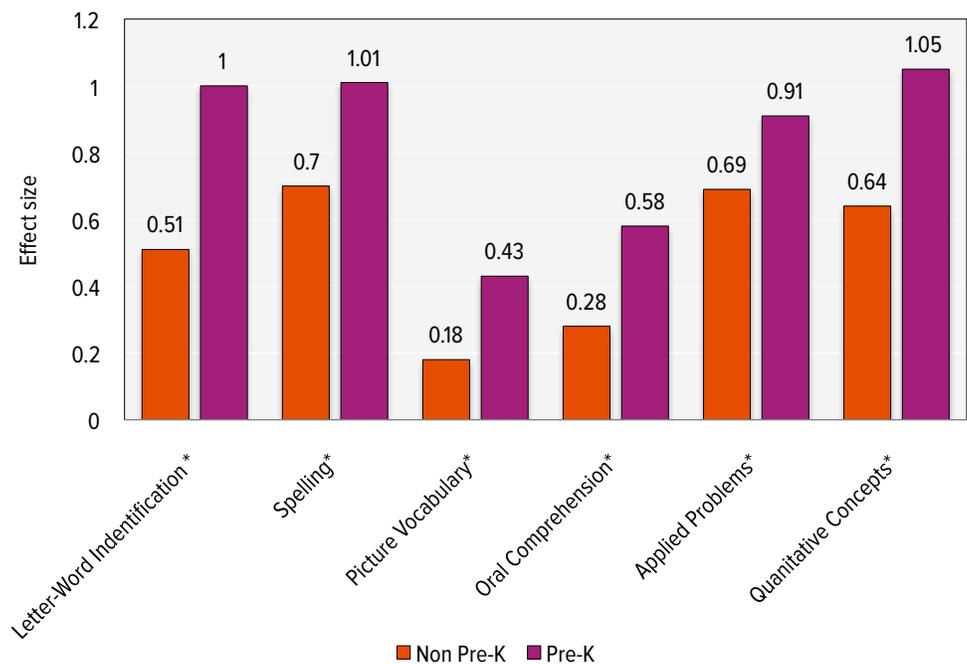
Figure 2 reports on the findings of the Vanderbilt Study, and shows the average effect sizes for both groups on the six skill areas measured by the assessment.

- Children who attended pre-k showed greater improvements in all areas than children who did not attend.
- The largest differences were seen for language-related skills (Letter-Word Identification, Spelling, Vocabulary, and Oral Comprehension).
- For all six skill areas, the differences between pre-k and non-pre-k children were statistically significant.

FIGURE 2:
Tennessee
Woodcock Johnson
Scores Before and
After Pre-k

Source: Lipsey, M. & Farran, D. Evaluating the effectiveness of Tennessee's voluntary pre-k program: Initial results. Peabody Research Institute & Vanderbilt University, 2011.

Available at: http://peabody.vanderbilt.edu/Documents/pdf/PRI/Summary_TN%20State%20Pre-K%20Study%20initial%20results2.pdf



These findings align with the results of a recent study of kindergarten readiness in MCS. In this analysis, incoming students' scores on the KRI were grouped according to children's educational experiences before kindergarten.

The results are telling: Kindergartners who attended MCS pre-kindergarten, a Head Start program, or center-based care earned markedly higher scores on the KRI than students who did not attend a similar program.

Illustrating the findings of that report, Figure 3 shows KRI scores according to the type of care children received in the year before kindergarten.

- Children who attended MCS Pre-K had, on average, the highest kindergarten readiness scores.
- Head Start children and children from center-based childcare had similar average scores.
- Children who did not attend pre-k, Head Start, or center-based care had the lowest average scores.

These results are consistent with previous research. Studies using large, national samples of children find that children in pre-kindergarten or center-based care at age four are better prepared for kindergarten than children who were cared for exclusively by parents or relatives. Pre-kindergarten programs are typically found to have greater benefits than other types of care.⁸

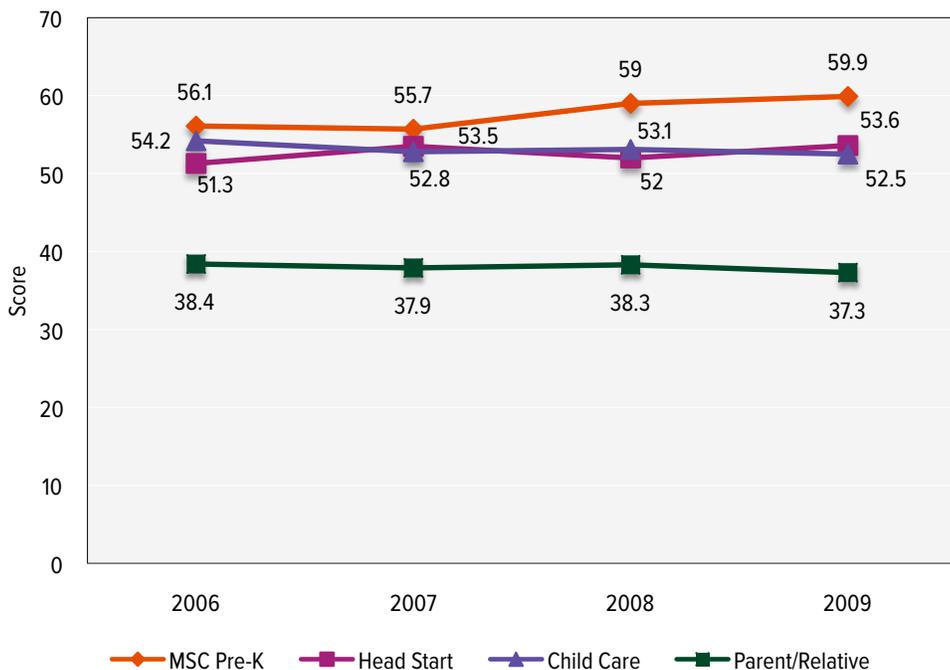


FIGURE 3: Memphis City School Kindergarten Readiness Indicator Scores by Type of Care in Previous Year

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. Available at: <http://www.mcsk12.net/docs/Data/PreK/Effects%20of%20Pre-K%20Experience%20on%20KRI%20Scores%20-%204%20Year%20Trends.pdf>

Pre-kindergarten gains are strengthened when we start much earlier.

The evidence is clear: Pre-kindergarten education raises children's school readiness scores. Still, persistent readiness gaps remain between racial and socioeconomic groups, and these readiness gaps become achievement gaps as children make their way through school. A proven response would be for a community to make meaningful, long-term investments in high quality early childhood education, beginning long before pre-kindergarten.

Recently, Edward Zigler, the father of the federal Head Start Program, commented on our growing scientific understanding of early development: "Today, as opposed to 1965, there is a vast literature available to inform planners and policymakers. The Nobel laureate James H. Heckman has studied this literature and concluded that program payoffs are much higher for young children than they are for interventions that occur at later ages. And the national impact study of Title I supported this position, showing that younger students benefited more from reading instruction than older ones ... So it would seem that a key guide to effective programming is 'the younger the better'."⁹

The foundation for school readiness is already being built in the first three years of life. For instance, stimulating learning environments and engaged, responsive parenting in infancy have been linked to language and cognitive abilities at age three.¹⁰ The learning disparities that result in school readiness gaps are based in early experiences. The black-white gap in school readiness scores is already apparent by age three, and tends to grow larger throughout the preschool and elementary years.¹¹ Similarly, low-income children have fallen behind their middle-income peers in vocabulary and pre-reading skills by age three.^{5,12}

Early experiences affect children's early brain development.

The reason for the early appearance of these achievement gaps involves the way that a child's brain develops in the first years of life. The first three years are an especially important period for brain development. In areas of the brain most closely associated with cognitive and language skills, most connections are formed before age three. In fact, the brain forms many more synapses than it needs, then gradually prunes away connections which are rarely or never used. A child's early experiences help decide which connections become stronger and which connections are eliminated.^{13,14}

Positive experiences help create strong and efficient connections that form the foundation for more advanced networks that will be formed later. A child's ability to achieve in preschool and kindergarten is tied to early skills that were learned before age three.¹⁵ By the same token, risk factors like poverty can begin affecting children's language and behavioral development in the first three years,¹⁶ and recent research shows that risk exposure in infancy is more detrimental to a child's school readiness than risk in the preschool years.¹⁷

There is growing evidence that poverty-related differences in learning stimulation and responsive parenting between low-income and higher-income families lead to differences in children's brain structure and functioning in the first years of life.^{18,19} These differences, in turn, translate into disparities in cognitive and emotional development, and this process is well underway by the time children reach preschool age.

Investments in children should begin earlier.

Research shows that the effects of poverty and other risk factors can be dramatically reduced by interventions that reach children during their first three years, when brain development is particularly responsive to positive experiences. Early intervention improves cognitive, language, and behavioral development, giving children a more secure foundation for school readiness and long-term well-being.^{20,21}

Investments that target children's earliest years of development establish the foundation for the highest rate of returns, particularly when they are combined with effective later intervention. As the economist James Heckman argues, the most effective intervention strategy is to "invest early and don't stop".²²

As our understanding of early childhood brain development expands, so too should our appreciation for the importance of high-quality early care and education. During this period, the foundation is laid for all subsequent development. As a result, the first years of life represent an exciting opportunity for us to improve the future well-being of our community. The quality of the care that children receive at home and in child-care settings makes a tremendous difference.

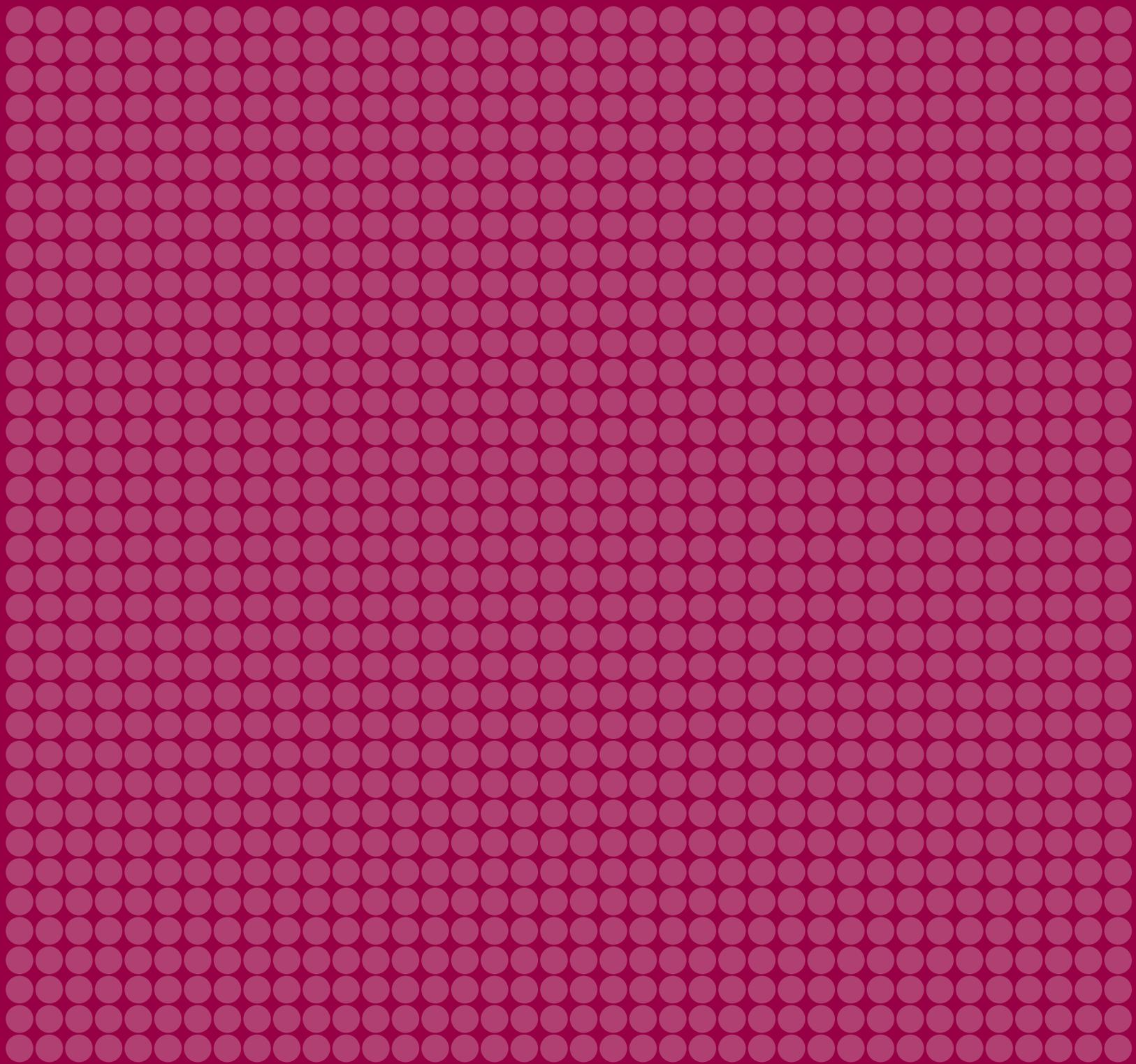
When children arrive at kindergarten without the developmental skill-sets in place to thrive, they are more likely to struggle and fall behind in school, are more likely to engage in risky behaviors as teenagers and become teen parents, and are more likely to drop out of high school. On the other hand, young children who are nurtured by warm, supportive caregivers in the first years of life develop greater social competence, exhibit fewer behavioral problems, and develop enhanced thinking skills.²³ This foundation, in turn, translates into enhanced academic performance and greater lifetime well-being. This is what we would wish for all children.

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Community



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Neighborhoods matter in the development of children.

Neighborhoods can help or hinder parents in their efforts to raise happy and successful children. Living in a crime-ridden, deteriorating community can undermine a family's efforts to create a safe and healthful environment for their children. Living in a safe, close-knit neighborhood, on the other hand, can buffer children from some of the effects of a problematic home environment.¹ Resources like parks, playgrounds, and after-school programs help parents provide their children with enriching experiences, and social connections among adults promote positive parenting by increasing parents' sense of support and well-being.

Risk factors like poverty, unemployment, and crime can reach children by multiple pathways. For example, living in a poor family has been associated with a variety of negative outcomes. But not all poor families live in high-poverty neighborhoods. Those who do may face risks that poor families in higher-income neighborhoods do not face. Research on community-level risk factors shows that unfavorable neighborhood conditions can increase children's risk for adverse experiences early in life, which in turn may interfere with optimal brain development, cognitive growth, and emotional and behavioral adjustment.²

Community influences begin to affect children even in the first three years of life.

Neighborhood characteristics are sometimes assumed to have only minimal effects in early childhood, because young children are supervised by parents and caregivers most of the time. While it is true that parents and family are the strongest influences on a child's development during the first years of life, the community in which a family lives can also have important effects.

A growing body of research shows that the social and economic aspects of neighborhoods are associated with children's outcomes, independent of family resources and income. Neighborhood factors like income, safety, and social cohesion have been linked to cognitive and behavioral development in early childhood—in some cases, as young as age two.^{3,5}

Neighborhood conditions can affect parenting quality.

Neighborhoods tend to affect children by affecting the family environment. Parents are influenced by neighborhood conditions in ways that affect their parenting. A dangerous neighborhood can increase parents' stress and increase their risk for mental health problems like depression.

Emotional distress, in turn, is likely to reduce parental warmth and responsiveness and may lead to parenting that is more harsh and controlling.^{2,6} Children in poor neighborhoods tend to have fewer learning experiences at home and lower quality interactions with their parents.^{3,5}

Poverty is on the move in Memphis and Shelby County.

Neighborhood poverty typically means that family, school, and neighborhood assets are limited while risk factors that threaten children's healthy development are abundant. Neighborhood income has been linked to important aspects of children's home environments, including safety, maternal warmth, and learning stimulation.⁷ In high-poverty neighborhoods, children are more likely to be exposed to violence, crime, and drug abuse.^{2,8}

As a result, neighborhood poverty has negative implications for children, regardless of family characteristics. Children living in poor neighborhoods have more social, behavioral, and academic problems, on average, than children in more affluent neighborhoods, even after accounting for family factors like income.^{9,10}

Neighborhood poverty is usually defined as the percentage of families in a given area who have incomes below the Federal Poverty Level. Research suggests that low rates of poverty are not always associated with neighborhood problems. But in neighborhoods with poverty rates of about 20 percent or higher, there is a significant increase in the likelihood of crime, violence, teen pregnancy, and other social problems.¹¹

New census data conveys another alarming reality: concentrated neighborhood poverty is increasing in Memphis as poverty spreads to neighborhoods that ten years ago had much lower poverty rates (Figure 1). Communities that were once considered "neighborhoods of opportunity" can no longer make that claim.

- Poverty is now distributed well beyond the traditional inner city neighborhoods north and south of downtown.
- Newly affected areas form an arc from northeast to northwest Memphis and from southwest to southeast Memphis. Raleigh, Frayser, Fox Meadows, Parkway Village, and Hickory Hill have all seen rising rates of poverty.
- This trend is likely to continue: Neighborhoods in the 10-19 percent poverty category are predicted to reach the 20 percent threshold over time.

For child poverty, the numbers are even more grim (Figure 2):

- Four out of five Memphis census tracts have child poverty rates of at least 20 percent.
- Over half of all tracts have child poverty rates of 40 percent or higher.

Outside the city, in suburban Shelby County, all census tracts have poverty rates below 20 percent. In Memphis, however,

- Nearly half of all census tracts have poverty rates of 20 percent or higher.
- Nearly one out of three census tracts have poverty rates of at least 40 percent.

FIGURE 1:
Percent of Total
Population in
Poverty by
Census Tract,
Shelby County

Source: US Census
Bureau. American
Community Survey,
2005-2009 Estimates

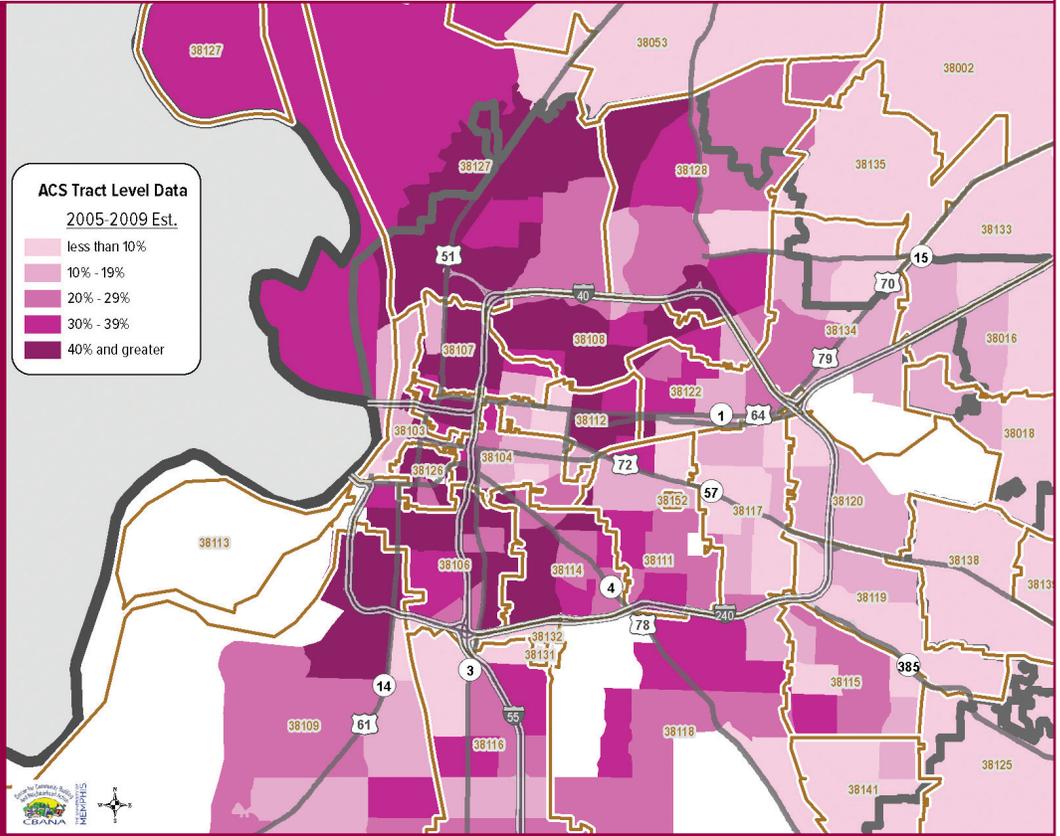
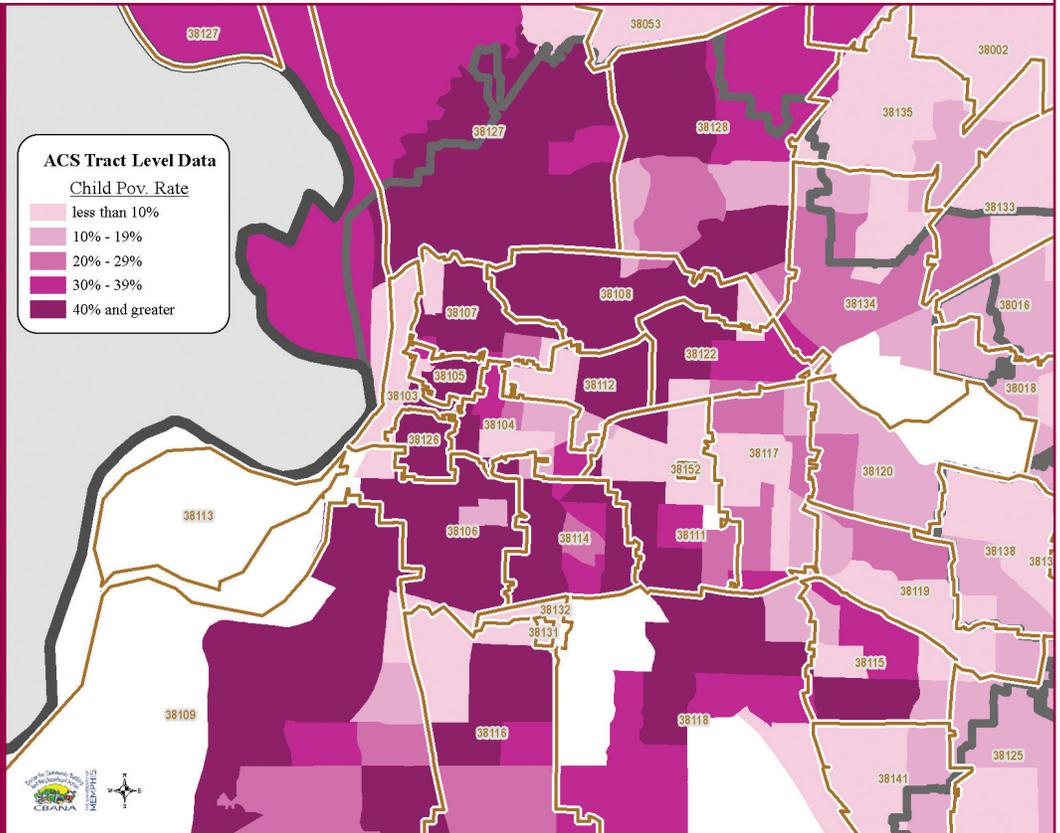


FIGURE 2:
Percent of Children
in Poverty by
Census Tract,
Shelby County

Source: US Census
Bureau. American
Community Survey,
2005-2009 Estimates

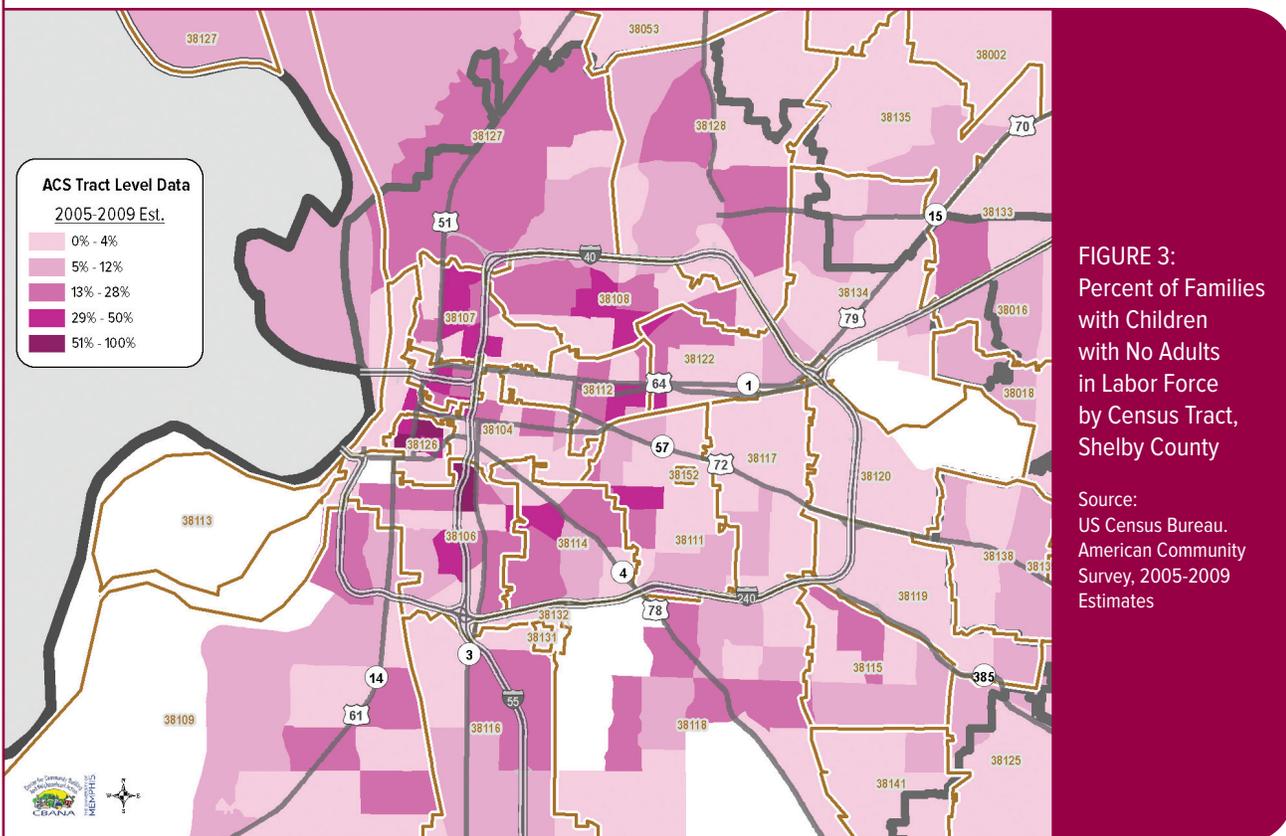


Widespread unemployment creates an unfavorable environment for children.

Many children live in households where there is no working adult – no parent or grandparent, no aunt or uncle, no older siblings. The likelihood of chronic poverty and other threats to healthy development among children in these families is high. Neighborhood unemployment has been linked to negative birth outcomes like prematurity¹² and to long-term child outcomes including educational attainment and employment.¹³

As Figure 3 shows, unemployment clusters in the same neighborhoods as child poverty. Children in these communities lack working adult role models both in their homes and in their neighborhoods.

- City-wide, about 8 percent of families with children include no working adults.
- In high-poverty areas the figure is likely to be double or even higher.



School and residential instability can interfere with children's development.

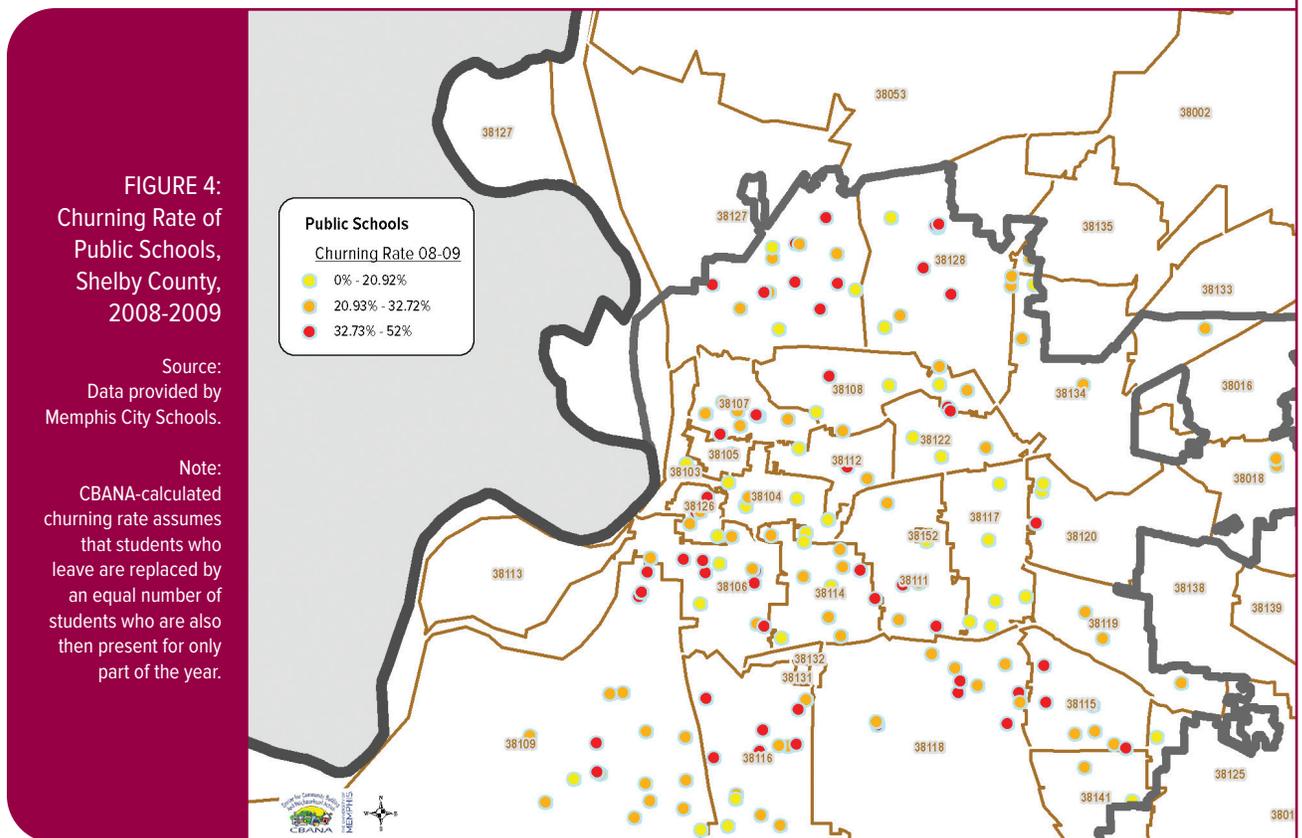
The term churning is used to refer to the movement of children in and out of local schools. A school's churning rate is the percentage of students enrolled at any time during the school year who are in that school for only part of the year.

For many students, frequent school transfers result in lower achievement, more behavior problems, and higher risk for grade retention and dropout. In schools with high levels of churning, teachers are less able to meet students' needs and to adhere to the curriculum. In some cases, such schools are an entire grade year behind schools with low churning rates.¹⁴

Most school churning is a result of families changing residences.¹⁵ Overall, 22 percent of households in Memphis moved in 2009.

Residential mobility is typically much higher among families in poor and low-income neighborhoods.¹⁶ In communities where families move in and out frequently, adults share fewer social ties and are less likely to help each other monitor and supervise children's behavior. Additionally, neighborhoods with lower social cohesion tend to have higher rates of crime and delinquency.^{10,17} School and residential instability, then, represent important and all-too-common risk factors faced by our community's children .

Figure 4 shows churning rates for Memphis City Schools (MCS). Comparing the distribution of high churning rates to the distribution of poverty in Figure 1 reveals that high churning schools tend to be in high poverty neighborhoods.



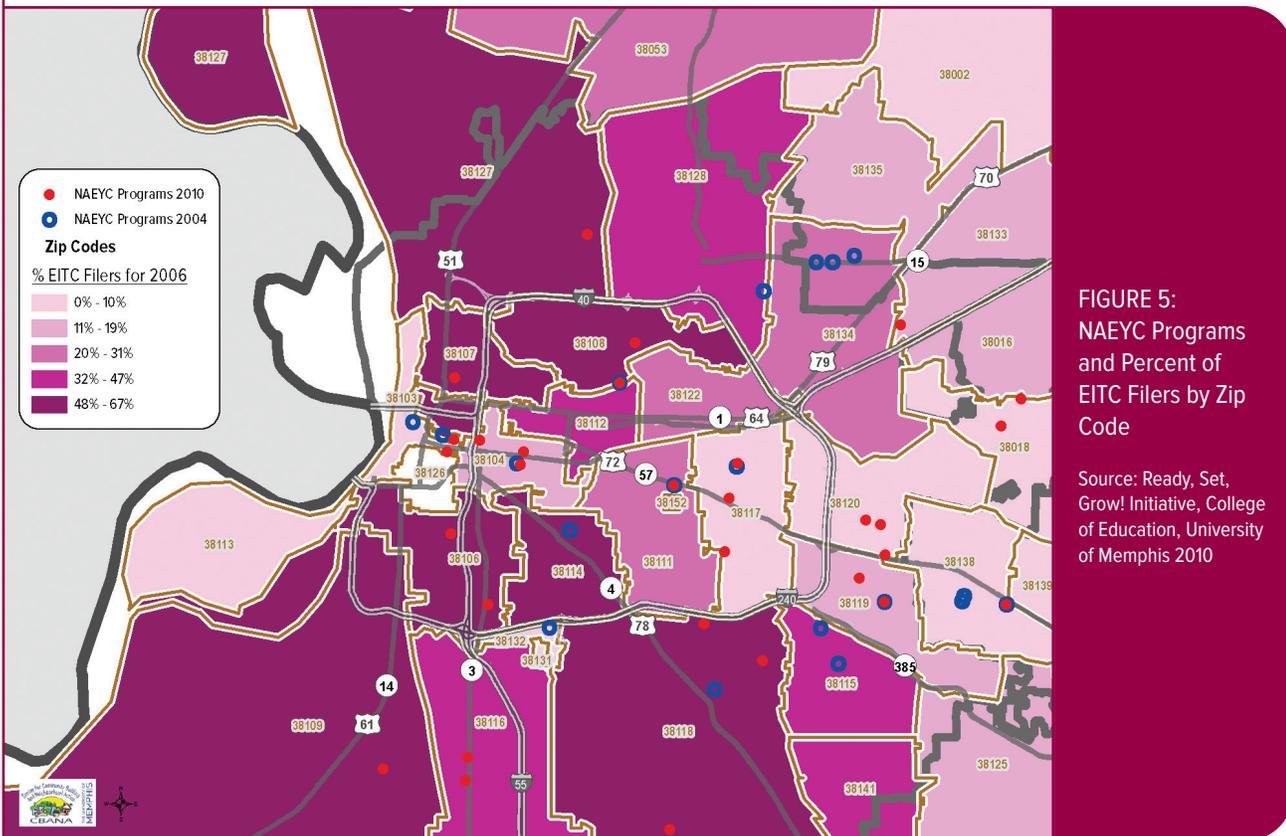
High quality childcare promotes early cognitive and emotional development.

Affordable high-quality childcare benefits children and their families. It can improve low-income children's school readiness, leading to higher achievement later in school.¹⁸ Children of low-income families, however, are more likely than other children to receive low-quality care, especially during their earliest years.¹⁹

Ready Set Grow is a local initiative to expand the number and geographic reach of quality childcare centers. The gold standard of quality for center-based early care and education is accreditation by the National Association for the Education of Young Children (NAEYC).

Figure 5 shows the expansion of high-quality childcare to lower-income neighborhoods between 2004 and 2010. The percentage of residents receiving the Earned Income Tax Credit (EITC) is used as a rough measure of neighborhood socioeconomic status.

- In 2004 when the initiative began, most NAEYC-accredited centers in Shelby County were located in more affluent midtown, east Memphis, and suburban areas.
- By 2010 Ready Set Grow had succeeded in increasing NAEYC accreditation among centers in neighborhoods with growing poverty and child poverty.



Exposure to violence can disrupt children’s behavioral and emotional development.

A child may be affected by violence by being a victim, by witnessing a violent act, or even by hearing about violence suffered by friends or family members. Nationally, more than 60 percent of children reported being exposed to violence, either directly or indirectly, during the past year. In cities like Memphis with high family and neighborhood poverty, the percentage is likely to be even higher.

An evolving body of research reveals the wide array of negative outcomes associated with children’s exposure to community violence. These range from anxiety and depression to aggressive and antisocial behavior.²⁰ Similarly, witnessing domestic violence can have lifelong effects on a child’s cognitive, emotional, and social development. Young children are more likely than older children to witness domestic violence directly.²¹

Memphis neighborhoods with the most violent crime and domestic violence have a disproportionate share of children.²²

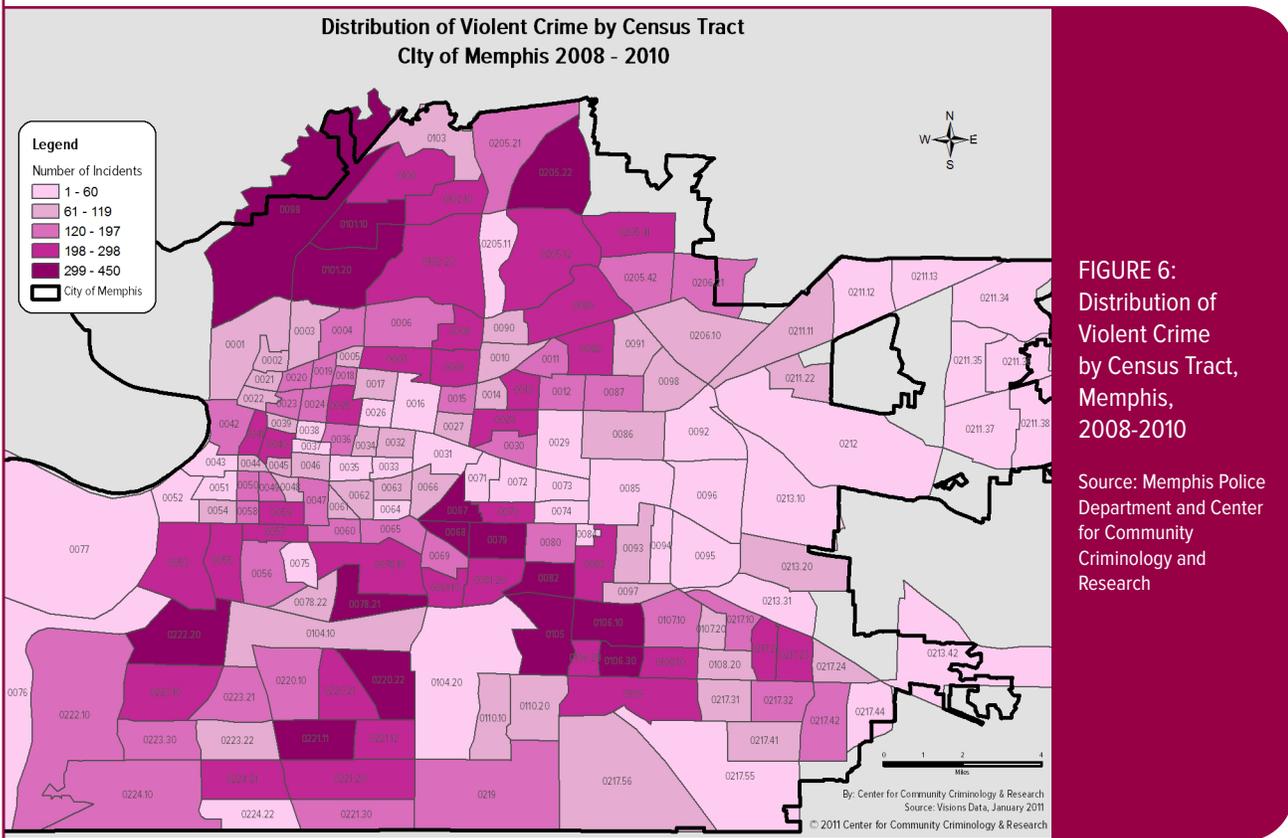
- The top 20 percent of census tracts ranked by prevalence of violent crime are home to 35 percent of children under age 5.
- The top 20 percent of census tracts ranked by prevalence of domestic violence are home to 32 percent of children under age 5.

Neighborhood interventions should be part of community efforts to improve children’s lives.

The neighborhoods in which children live influence their chances for healthy development and long-term well-being. Community-level interventions can be an important avenue for improving outcomes for at-risk children and families.

One such strategy is Defending Childhood, a new initiative of the U.S. Department of Justice. Defending Childhood will address children’s exposure to violence by supporting community efforts in prevention and treatment. Shelby County is one of eight sites chosen to receive planning funds to improve identification and assessment, increase access to quality services, and develop new programs as needed. Eventually, four of the initial eight demonstration sites will be chosen for full implementation.²³

Figure 6 shows the distribution of violent crime in Shelby County by census tract. Outlined in black are the three police precincts—Old Allen Station, Mt. Moriah Station, and Ridgeway Station—that are expected to receive funding under the Defending Childhood initiative.



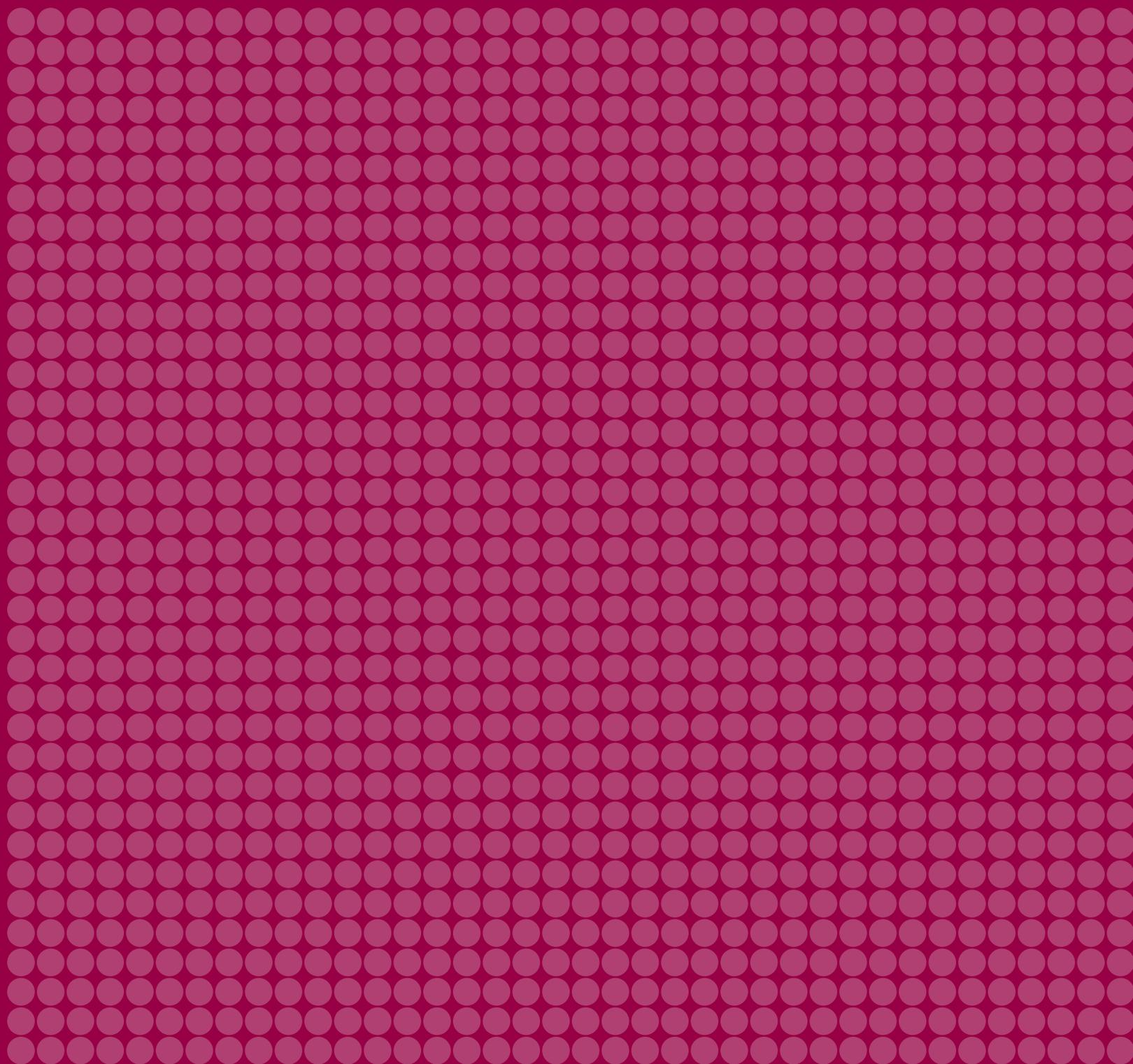
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SPECIAL INTEREST SECTION

Intimate Partner Violence



Witnessing violence in the home can harm children’s brain development.

Living in a home where violence frequently erupts is a serious threat to a child’s healthy development. Seeing or hearing a family member being threatened or assaulted is a traumatic experience that can destroy the feelings of safety and security that help children grow and learn.



Moreover, early traumatic experiences can interfere with healthy brain development. Because the brain is still organizing itself in response to a child’s experiences, traumatic experiences during these early years can have long-term effects on the brain’s structure and functioning. Children who witness violence between parents or caregivers are at risk for cognitive, emotional, and behavioral difficulties throughout their lives.¹

Intimate partner violence is commonly defined as physical, sexual, or psychological harm by a current or former partner or spouse. (Experts tend to use this term instead of “domestic violence” since domestic violence can actually mean any violence occurring in a domestic setting, including child abuse and elder abuse.²) Although children are not the direct victims of intimate partner violence, they are often present when it occurs. While many parents try to shelter their children from it, children are often exposed to intimate partner violence by

- Seeing or hearing the violent incident
- Witnessing the effects of the violence on the victim (bruises or injuries, for example)
- Seeing other results of the incidence (such as damage to the home)
- Living in an environment of stress and fear created by the violence.³

Exposure to Intimate Partner Violence in the U.S.

Some studies estimate that almost 30 percent of children in the U.S. are exposed to intimate partner violence each year.^{4,5} National data show that in about half of reported incidents of partner violence, children are present. In about 80 percent of these cases, children see or hear the violence.⁶

Research shows that witnessing violence affects even very young children. Some effects can be seen as early as infancy: at age one, infants who have been exposed to intimate partner violence show more distress than other babies when they hear adults yelling or arguing.⁷ Frequent violence can lead to posttraumatic stress symptoms even at this young age.⁸

These early effects can be long-lasting. Children under three who witness violence toward a family member are at increased risk for psychological problems such as depression and anxiety disorders.⁹ Cognitive development can also be affected: some children exposed to high levels of violence during their first years have IQs at age 5 that are up to 8 points lower than those of other children.¹⁰

Children who witness intimate partner violence are often exposed to other risks as well.

Data from across the U.S. show that intimate partner violence is more prevalent in homes where other risk factors are also present.^{6,11} These include

- single-parent families
- families living in or near poverty
- families where parents have less education
- families where a parent is unemployed

Children from these families are already at risk for impaired brain development due to their greater chances of experiencing poor nutrition, harsh parenting, and other developmental threats.¹² Exposure to intimate partner violence adds yet another restraint on their chances for well-being and success.

Both Memphis and Shelby County as a whole have consistently high rates of intimate partner violence.

- In 2009, there were more than 20,000 incidents of intimate partner violence reported to Memphis police, representing half of all crimes against persons.
- The same year, there were almost 1,500 cases reported to Shelby County law enforcement, representing almost half of all crimes against persons in that jurisdiction.¹³

Many of our community's children are exposed to violence in their homes.

In 2008, more than 2,500 Shelby County women participated in a survey examining the prevalence of intimate partner violence.¹⁴ A small percentage (2.8%) reported that they had been a victim and that they had children under the age of 18 living with them at the time of the violent incident.

- About half (48%) of women who had been victims of domestic violence had children under 18 living with them.
- More than half (64.4%) of surveyed victims with children said that their children had witnessed the domestic violence.
- Almost half (46.8%) of those children who witnessed violence tried to stop the violence.
- Over one-third (34.8%) of those children that witnessed violence were threatened by the woman's violent partner.
- 7.3 percent of all survey participants reported having been physically assaulted as a child, and 11.6 percent reported having been sexually assaulted in childhood.

Intimate partner violence in Memphis and Shelby County is strongly associated with other risks.

Memphis and Shelby County not only display lower average household incomes compared to state and national averages, but also show disproportionately low numbers for those possessing a Bachelor's degree or higher. These disparities combine to create an atmosphere of increased risk for high rates of intimate partner violence.¹⁵⁻¹⁷

Figure 1 illustrates the distribution of intimate partner violence in Shelby County by zip code (based on the results of the 2008 survey).

- Frayser and North Memphis have the highest rates of intimate partner violence. The lowest rates are found in East Memphis, Bartlett, and other areas to the east.
- Whitehaven, Downtown, and Midtown have higher rates than Raleigh and Southeast Shelby County.

Figure 2 shows how key demographic characteristics of each zip code are correlated with the prevalence of intimate partner violence. Consistent with national trends, communities with higher levels of intimate partner violence also tend to be communities with

- More unemployment
- Higher rates of school dropout
- Higher rates of poverty
- Higher proportions of single-parent families¹⁴

FIGURE 1:
Distribution Of Women in Abusive Relationships by Zip Code, Shelby County, 2008

Source: University of Tennessee Health Science Center. Religion and Intimate Partner Violence Survey, 2008

Abusive relationship

- Less than 25%
- From 25% to less than 30%
- From 30% to less than 35%
- 35% or higher
- No Data

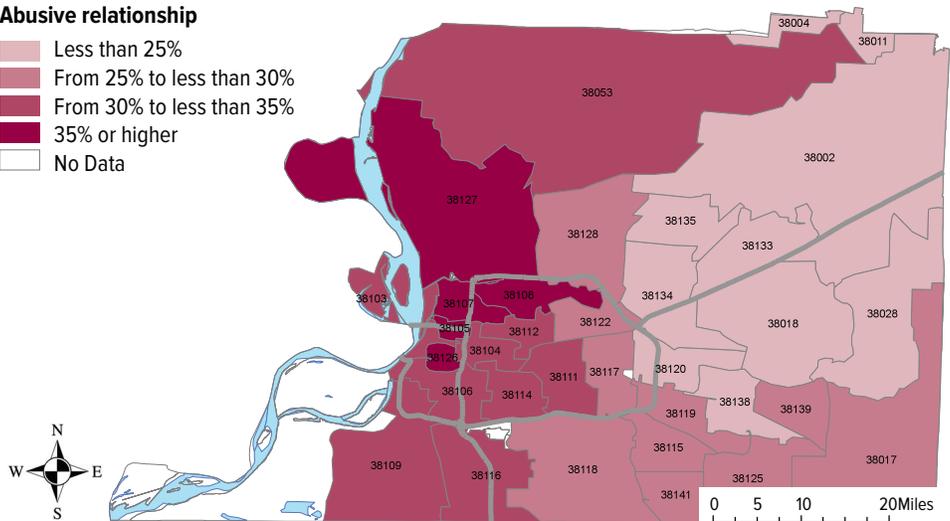


FIGURE 2:
Distribution Of Women in Abusive Relationships by Zip Code And Demographic Characteristics, Shelby County, 2008 & 2000

Source: University of Tennessee Health Science Center. Religion and Intimate Partner Violence Survey, 2008; U.S. Census Bureau, 2000

Abusive relationship

- Less than 25%
- From 25% to less than 30%
- From 30% to less than 35%
- 35% or higher
- No Data

Census Variables Percentage

- Unemployed males
- Female head of household
- Population below poverty level
- High school dropouts

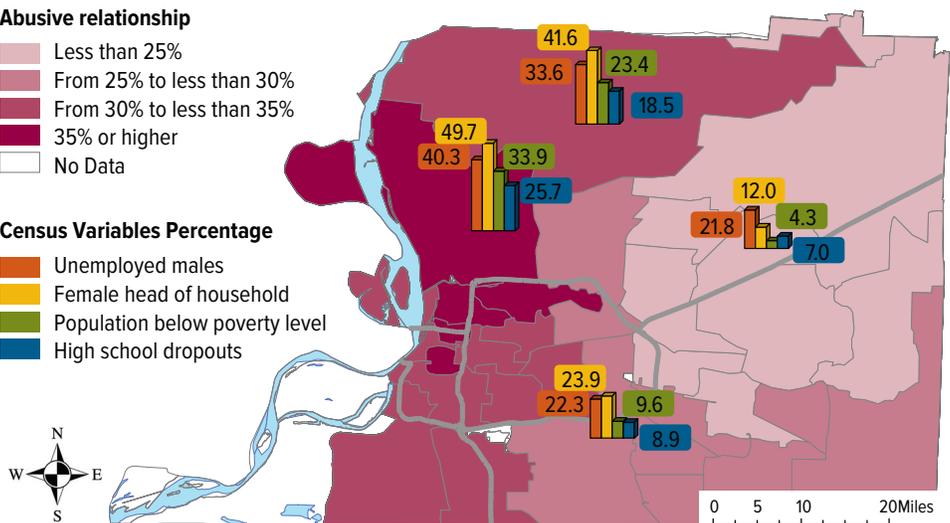


Figure 3 presents median household income in Shelby County by zip code.

Comparing Figure 3 with Figure 1 shows that, consistent with other research, low-income areas are also high-violence areas.

Figure 4 shows median house values by zip code.

As with median income, the median house value of a zip code is a strong predictor of the prevalence of intimate partner violence.

Median household income

- \$20,805
- \$30,256
- \$50,004
- \$60,338

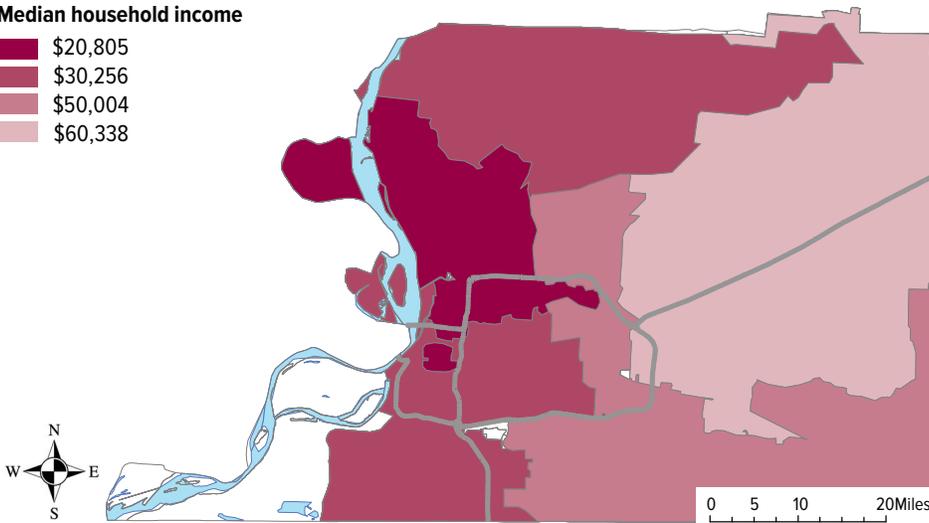


FIGURE 3:
Median Household
Income by Zip Code,
Shelby County,
2000

Source: U.S. Census
Bureau, 2000

Median house value

- \$46,700
- \$69,200
- \$101,850
- \$144,000

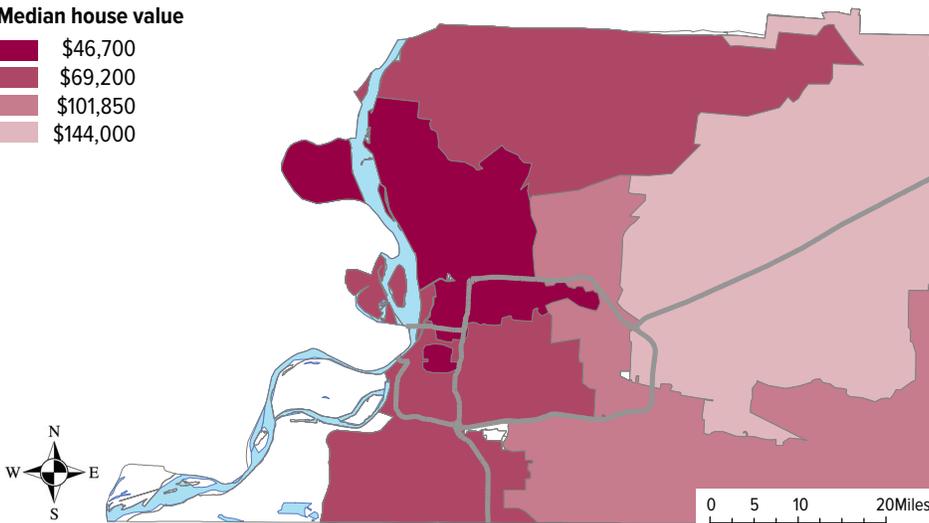


FIGURE 4:
Median House
Value by Zip Code,
Shelby County,
2000

Source: U.S. Census
Bureau, 2000

Victims of intimate partner violence face numerous barriers to getting the help they need.

Intimate partner violence extends beyond the adult relationship and damages the lives of children who are exposed to it. Research consistently shows that exposure to intimate partner violence can detrimentally impact child development across many domains. Unfortunately, however, adult and child victims who seek help do not always get the assistance they so desperately need.

Victims in Memphis and Shelby County face numerous challenges in obtaining assistance. For instance, lack of awareness of available programs can create more confusion and uncertainty for families already struggling to identify and secure assistance. Challenges may continue to surface for those who succeed in connecting with services. Eligibility requirements, exclusion criteria, and child regulations make it difficult (and sometimes impossible) for women and their children to gain admittance to shelters.¹⁸ Barriers like these leave them with fewer options for escaping the violence.

Moreover, service providers often face a combination of increased demands and decreased funding that in turn affect the quality and availability of services.¹⁹ Past research²⁰ on programs in Memphis and Shelby County has identified the following key areas for improving the accessibility and effectiveness of existing programs:

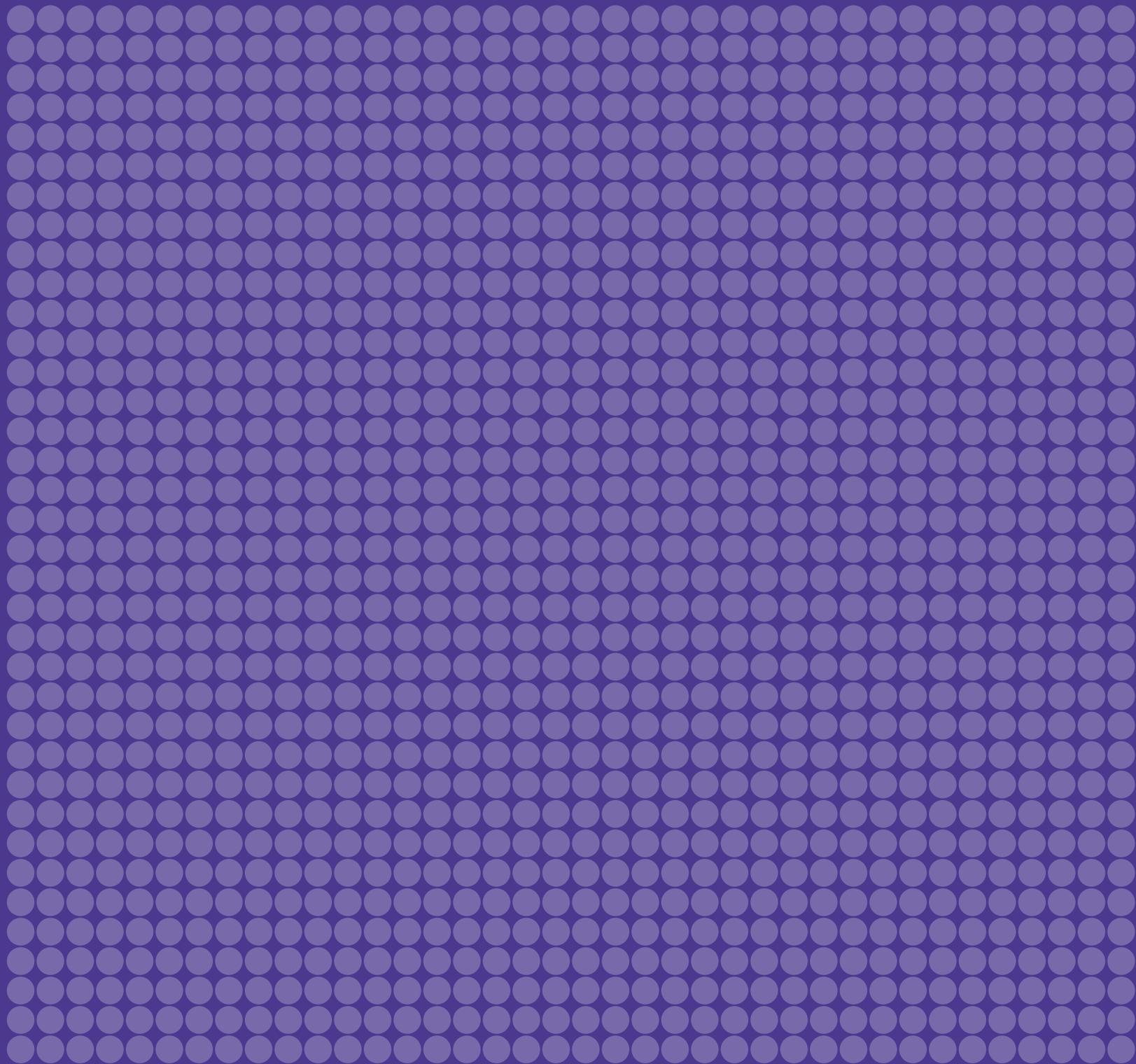
- security
- cultural sensitivity
- accessibility and promotion of services
- effective interventions for victims and for abusive partners
- service provision capacity
- connections among service agencies

Additional services would undoubtedly benefit at-risk children. Awareness and prevention efforts, coupled with accessible, well-funded, and evidence-based treatments, can also play a crucial role in breaking the ongoing cycle of violence currently undermining the healthy development of our community's children.

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Promising Practices

Health disparities are linked to poor birth outcomes in Memphis and Shelby County.

Health disparities refer to differences in the risk of disease, disability and death among different groups of people. Race, ethnicity, gender, age, and education are just a few of the factors which have been linked to such disparities.¹



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Across Shelby County there continue to be significant disparities among racial groups in areas such as housing, income, and education. There are also significant differences in disease, disability and death.² Memphis and Shelby County have the highest number of infant deaths in Tennessee, despite having a large university medical center and 116 primary care physicians per 110,000 citizens.³

The infant mortality rate for blacks in Shelby County is over three times that of whites.⁴ Part of this gap can be explained by differences in socioeconomic factors like income and education. Many diseases demonstrate a strong

association with socioeconomic status (SES); individuals with higher SES experience better health. This is such a robust finding across so many diseases that the Institute of Medicine has declared social factors to be critical determinants of health and emphasizes the importance of including them when designing interventions.⁵

However, research addressing health disparities has been hindered by the difficulties involved in enrolling minorities and other at-risk populations in clinical research. Many barriers to enrollment have been well documented, including language barriers, cultural differences, and lack of investigator access to these populations.⁶⁻¹¹

The BLUES Project represents a promising strategy for overcoming social and cultural barriers.

The BLUES Project (Building Lasting Unshakeable Expectations into Successes) is a culturally competent and culturally responsive approach to addressing health disparities and has shown that it can reduce health and social risk factors involved in infant mortality and other negative outcomes.

The health care goals of the BLUES Project during pregnancy include

- improving mothers' health-related knowledge, attitudes, and behaviors
- ensuring that all participants receive quality prenatal care services
- reducing risks to future pregnancies
- reducing disparities in adverse pregnancy outcomes through the provision of social support coupled with community engagement

The BLUES Project represents a paradigm shift in the delivery of health and social support services to at-risk minority populations.

The BLUES Project is an intervention targeting low-income, at-risk mothers. The program provides group-based education, individual case management, and assistance in accessing community resources and services. The BLUES Project adapts the best aspects of both traditional clinic-based prenatal classes and nurse home visitation services. Health educators, community outreach specialists, and case managers work with participants during pregnancy and throughout the child's first two years of life. The BLUES staff, whose demographics mirror those of the clients they serve, assist mothers in setting attainable life goals and taking an active role in their health and the health of their children.

BLUES features monthly clinic-based group visits for pregnant women and fathers of infants from onset of prenatal care until the infant's second birthday. Individual sessions are available

depending upon need. One-on-one case management sessions are available for addressing sensitive issues or making referrals to community resources and services. In addition, each participant receives a phone call every month to update contact information and follow up on the results of referrals to outside services.

Monthly education sessions cover a variety of topics including

- general health and nutrition
- domestic violence or sexual assault
- sexually transmitted diseases
- postpartum depression
- breast feeding
- immunization needs
- infant development

BLUES participants have better birth outcomes than other at-risk mothers.

More than 450 pregnant women enrolled in BLUES between July 2007 and December 2008 (Phase I and Phase II of the program). A total of 84 percent remained in the study through delivery, resulting in a sample of 392 mother-child pairs. When mothers completed the program (two years after giving birth) they underwent a final assessment measuring a variety of social and socioeconomic outcomes. Social measures included self-reported substance abuse, exposure to domestic violence, and risk of depression. Socioeconomic measures included educational attainment and employment status. The following is a brief summary of the results.

Comparing the birth outcomes of BLUES participants to outcomes among other at-risk Shelby County mothers provides strong

evidence of the program's effectiveness. BLUES mothers had lower rates of prematurity, low birth weight, and infant mortality compared to mothers who met the program's eligibility criteria but chose not to participate. This was particularly true for Black infants born in Memphis.

BLUES participants also made significant socioeconomic changes from enrollment through the end of the 24-month follow-up period. At enrollment, 30 percent of participants were employed. At exit, 43 percent were employed in full-time positions. At enrollment, 53 percent had less than a high school diploma. At exit, 69 percent of participants had earned a diploma or GED. Additionally, there was an increase in the number of mothers who were enrolled in or had completed a college degree program.

Group participation is an important component of the BLUES program.

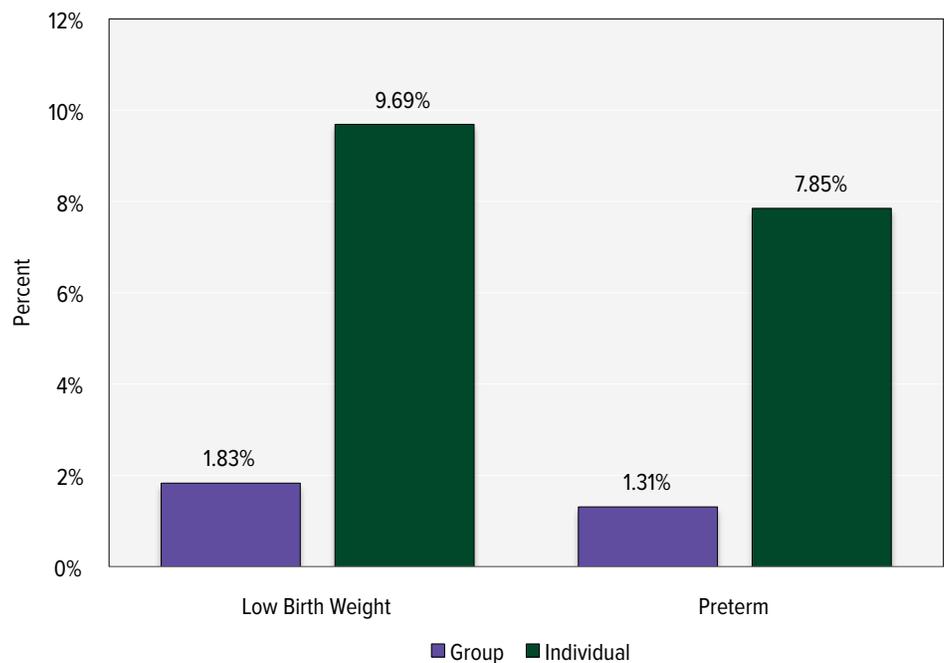
BLUES participants are encouraged to experience the 36-session curriculum in a group setting. They may, however, choose to receive individual sessions instead. Mothers who participated in group-based education had better birth outcomes than mothers who received individual instruction. They also made statistically significant improvements on some social and socioeconomic measures.

Less than 2 percent of mothers in group education had a low birth weight birth, compared to almost 10 percent of mothers in individual education (Figure 1). Similarly, 1.31 percent of group mothers had a preterm birth, compared to almost 8 percent of mothers receiving individual instruction (Figure 1).

Additionally, domestic violence exposure decreased among group mothers, from 19.4 percent at baseline to 9.7 percent at follow-up—a reduction of 50 percent. For mothers in individual education, exposure decreased by less than two percent (Figure 2). Among group mothers, reported substance abuse decreased between program entry and follow-up, from 11 percent to zero.

FIGURE 1:
Adverse Birth
Outcomes by
Curriculum
Delivery

Source: University of
Tennessee Health
Science Center,
BlueCross BlueShield
of Tennessee Health
Foundation. The BLUES
Project Data, 2011



For mothers receiving the curriculum individually, it increased from 35.3 percent to 46.4 percent (Figure 2).

Somewhat unexpectedly, risk of depression increased for both groups of mothers. Among mothers who received individual instruction, depression risk increased from 58 percent to 63.3 percent. An even larger increase occurred among mothers in group education: from 53 percent to 75 percent.

While these social measures provide only mixed evidence of the benefits of group-based education, the socioeconomic measures (not shown) are more consistent. Overall, BLUES Project mothers made significant advances in educational attainment and employment status. Those who participated in group-based education showed the biggest gains. On average, group mothers had larger increases in high school graduation and full-time employment than mothers who received individual instruction.

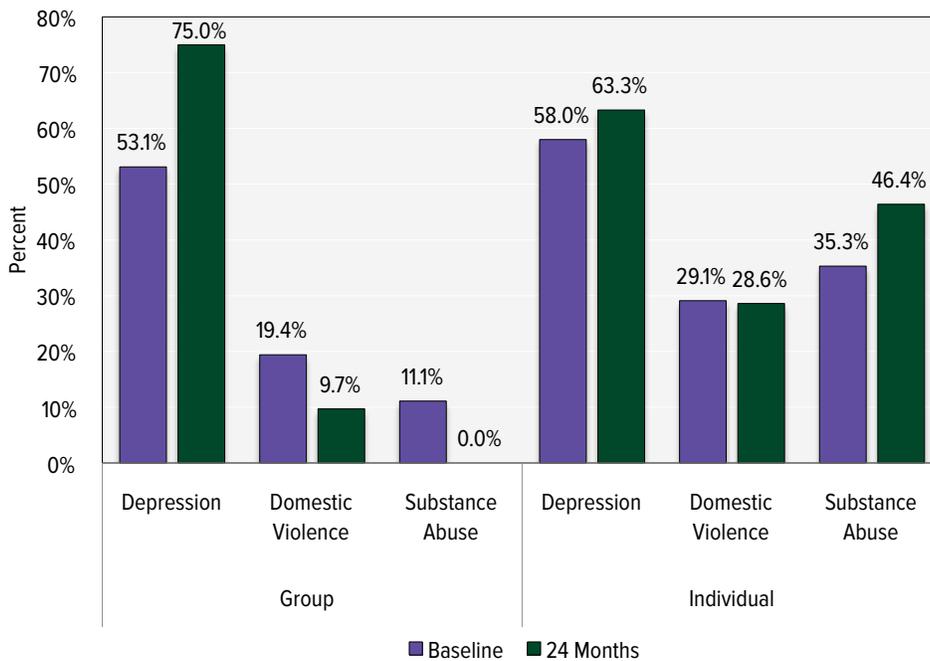


FIGURE 2:
Prevalence of
Social Risk by
Curriculum
Delivery at
Baseline and
24 Months

Source: University of Tennessee Health Science Center, BlueCross BlueShield of Tennessee Health Foundation. The BLUES Project Data, 2011

BLUES provides further evidence of the importance of social support for improving outcomes among at-risk mothers.

This analysis of BLUES Project outcomes suggests that support provided by friends, family members and peers is beneficial and that social support skills training may be especially useful in improving health, social outcomes, and socioeconomic prospects among at-risk mothers.

Although there were positive effects for both the individual and group interventions, group participants appeared to reap the greatest benefits from the program. By contrast, mothers preferring individualized education had more adverse birth outcomes and showed fewer social and socioeconomic gains on some measures.

This pattern is consistent with previous research, which typically reports favorable psychological and medical outcomes of support group interventions. Social support has been linked to positive long-term health outcomes, including better immune function, lower blood pressure, and reduced mortality.¹² Self-help groups provide an arena where participants can both provide and receive emotional support, and this reciprocity appears to promote well-being. Furthermore, peer support groups provide members an opportunity to develop friendships and build lasting social networks.

Why BLUES Works

- BLUES is a culturally competent, community responsive approach to addressing risk factors of infant mortality and poor maternal/child health outcomes.
- BLUES demonstrates the huge impact that social support can yield, not only in terms of birth outcomes, but also for overall health and quality of life for at-risk mothers.
- The BLUES model is holistic in scope compared to other programs, and empowers women to overcome social and economic barriers adversely affecting their health and that of their children.
- BLUES does not set priorities for participants: Mom sets goals; BLUES helps her to achieve!
- BLUES does not simply make referrals: it is designed to help families navigate the community for effective resource utilization.

In conclusion, the BLUES Project is proving to be an effective model for reducing infant mortality, premature and low birth weight deliveries, particularly for Black infants. The program is now in its third funding phase and continues to be a driving force in the delivery of education and support services to at-risk mothers. BLUES is a cost-effective, collaborative approach to health care that holds promise for improving the health and social outcomes of our mothers, children, families, and communities.

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