



# The Urban Child Institute

*A philanthropic organization that focuses on children*

The institute is a coalition of community researchers, strategists and interventionists dedicated to the improvement of well-being of children, especially from conception to age 3.

We will improve the lives of children and increase the social capital of Memphis by accelerating the infusion of meaningful knowledge and intervention that will change existing policies. We will work to connect research and knowledge with action.

Other individuals and organizations who also want to improve the lives of children will find the institute to be a trustworthy partner and resource for expertise, advice and collaboration.

The State of Children in Memphis & Shelby County was initiated and funded by the institute and published first in 2006. The initial purpose was to collect in one document all existing, important research data on children in Memphis and Shelby County. Many individuals and organizations had benefited from pieces of that data, but the 2006 “children’s databook” was the first time that the data all had been assembled in a single document and with professional analysis.

The 2007 volume and now this 2008 volume have continued to track and update the data. This volume also provides a compilation of “best practices” that might be expected to have a positive impact on the problems faced by local children that are documented herein.

The data have been organized in seven segments plus a glossary. The segments are:

1. *Demographics Domain* is a necessary prelude of important statistics.
2. *Health Domain* is an overall physical exam of the city’s children.
3. *Education Domain* is a community report card.
4. *Family Home Environment Domain* reports the impact of family and home.
5. *Building the Brain* explains the permanent impact of factors during life from conception to age 3.
6. *The Economic Burden of Low Birth-Weight Infants* reports the cost to society of pre-term and underweight babies.
7. *Best Practices for Solutions* quantifies for the first time the benefits of applying in Memphis and Shelby County strategies that have been successful elsewhere.

The institute’s objective and hope continue to be that this document will encourage and rally others into action for positive change. The data contained herein are targeted at government leaders, education and medical professionals, religious organizations and community stakeholders of all types. They should provide clear direction for more steps to identify objectives and strategies to improve the state of our children.

It is not the institute’s intention to imply that these are the only areas of importance on the topic of children in Shelby County. Opportunities exist for professionals in all fields to identify additional important domains and sub-domains. The potential for such extensions of this work are highlighted throughout.

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# Economics continue devastating assault on Shelby County children.



The Urban Child Institute (TUCI) publishes The State of Children in Memphis and Shelby County annually to help us understand the well-being of our youngest children, their families and their communities. We intend for this publication to do three things.

1. Establish baseline measures of child, family and community well-being.
2. Point to significant trends in child well-being.
3. Suggest possible alternative futures for our community – considering both current trends and the promise of research-supported intervention strategies.

Much of the information contained in this year's "databook" reflects the maxim that the best predictor of where we will be tomorrow is where we are today. As the following chapters attest, in many respects the condition of children in Memphis mirrors their condition in the recent past, and is consistent with measures of child well-being in too many other large American cities:

- One third (29%) of the children in Shelby County is in poverty and another quarter (24%) is low income. Almost all (89%) of the children in poverty in Shelby County reside in the city of Memphis and most (84%) of the county's children who are low-income live in Memphis as well.

- Many families face multiple threats to their well-being. Such threats include:
  - \* solo-parenting
  - \* tentative connections to decent jobs
  - \* unreliable transportation
  - \* residential and family insecurity
  - \* instability
- For too many of our young children, this configuration of family and community vulnerability leads to poor emotional, social and cognitive development. This leaves many children ill prepared when it comes time to enter school.
- As our children grow, the range of impoverishments they experienced early in life translates into a wide variety of adverse outcomes. These include:
  - \* academic achievement gaps
  - \* higher drop-out rates
  - \* higher incarceration rates
  - \* higher rates of risky behavior among children and teens
  - \* parenting at an early age

Since the publication of last year's "databook," there have been several changes in the well-being of children in our community.

## On the positive side:

- The number of low birth-weight infants born in Shelby County decreased.
- The percentage of pregnant women who received adequate prenatal care increased slightly.
- The percentage of women who smoked during pregnancy decreased.
- In both the City of Memphis and Shelby County, the number of households with children increased.
- Per-pupil spending for public education increased in both Memphis City Schools and Shelby County Schools.

## On the negative side:

- Deaths increased among infants in Shelby County.
- The birth rate increased among teenagers in Shelby County.
- More women in Shelby County gained more than 50 pounds during pregnancy.
- Sexually transmitted disease rates are rising.
- In Memphis the percentage of children living below poverty increased.
- In Shelby County the percentage of children living below 50 percent of the Federal Poverty Level (FPL) increased.
- In both Memphis and Shelby County the median incomes of families with children decreased.
- The percentage of three-star-rated child-care centers in Shelby County decreased.
- The recession has created threats of funding cuts for public education.
- A rising number of home foreclosures has created more family financial crises and residential vulnerability and has added to school transience.

We anticipate that these trends will continue for the foreseeable future.

This 2008 “databook” includes an overview on the development of the human brain from conception to age three. It documents problems that arise for educators resulting from inadequate brain stimulation early in children’s lives. A child who enters school with exposure to only one-third as many words as other children and whose brain has had only a fraction of the stimulation of other children’s brains will likely fall behind other students.

New in this volume is research documenting the economic burden on society of pre-term and low-weight births. It attempts to measure the extent and cost of the problem in our community. Consistent with most other urban areas, Memphis and Shelby County must make difficult decisions about how best to invest in our future. For the first time since the Yellow Fever epidemics of the 19th Century, Memphis and Shelby County have lost population, and our tax base is shrinking.

“The ability of Memphis to serve as an economic magnet for people of this region ... is clearly in question,” according to Dr. Gnuschke, director of the Sparks Bureau of Business and Economic Development.

Almost three out of four students in Tennessee are performing below grade level, according to the results of the National Assessment of Educational Progress. Moreover, one quarter of adults in Memphis fail to complete high school. As a result, much of the public is uneasy about the performance of our public schools.

New concepts and new strategies are being employed in other cities. Communities are making bold, new commitments to programs that bolster opportunities for children. We urge you to read the segment in this volume entitled *Best Practices for Solutions*.

Language acquisition and pre-reading skills are cornerstones in the foundation for learning, and pre-kindergarten is a pathway to success in school. Careful evaluations of high-quality pre-kindergarten programs, backed by more than four decades of evidence, indicate that there is a \$17 return to a community for every dollar it invests in programs for very young children. Read “The Memphis Matrix.”

In order to reach the future we prefer for all our children and families, Memphis and Shelby County must make the important decisions to invest more of our resources in early childhood well-being. This is the smartest development dollar a municipality can spend to place the next generation on the best path to adult success.

# Demographics

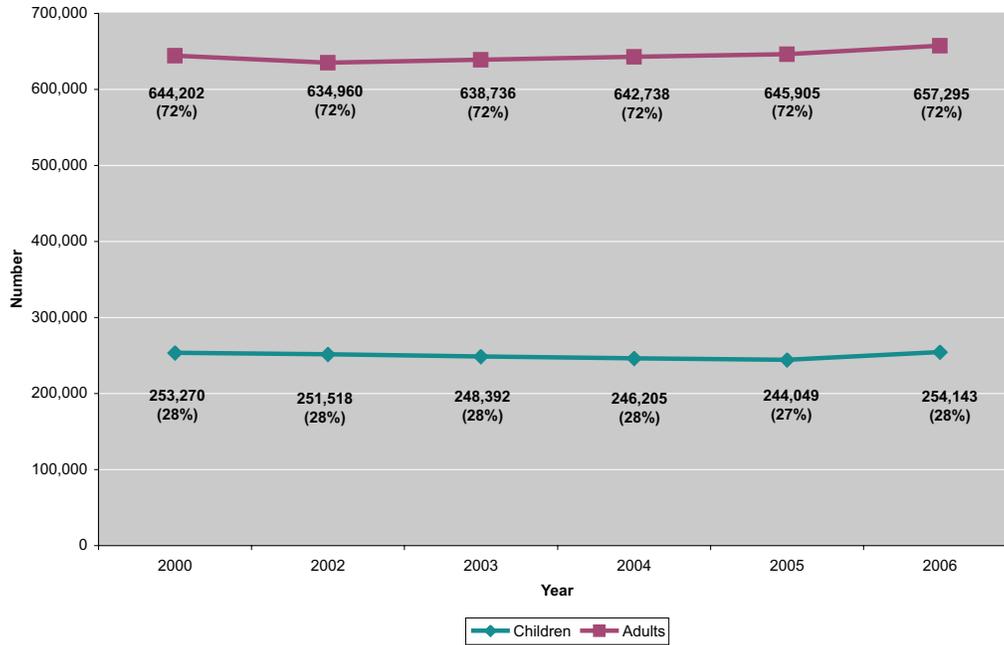


## **Shelby County is the most populous county in Tennessee.**

In 2006 Shelby County remained the most densely populated county in Tennessee, including more than 900,000 residents 70 percent of whom lived in the City of Memphis. The county's population was larger than those of six states in America

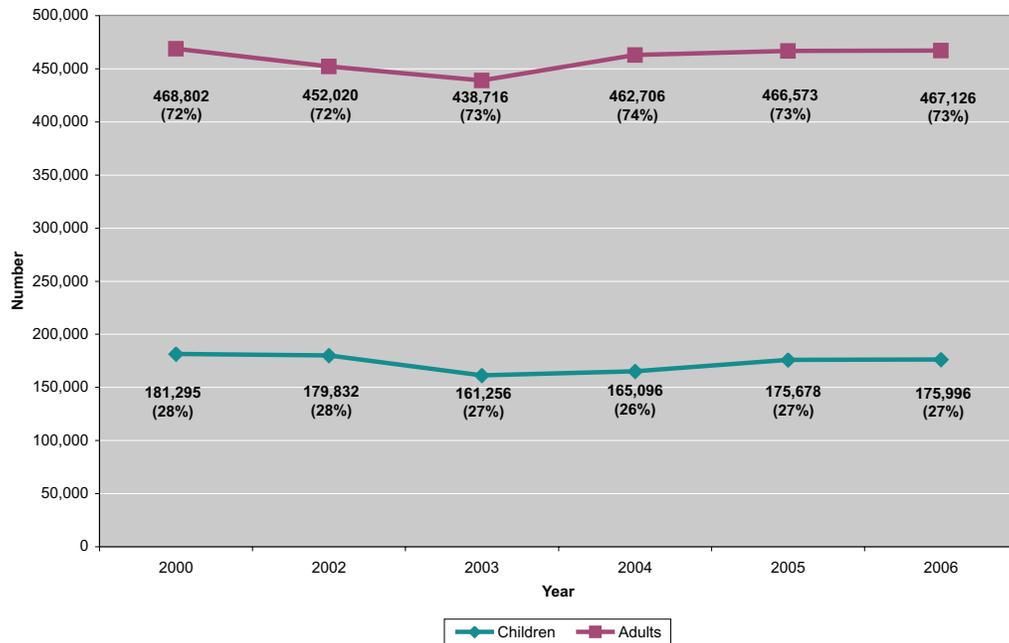
(Alaska, Delaware, North Dakota, South Dakota, Vermont and Wyoming), yet neither the county nor the City of Memphis populations grew from 2000 to 2006.

### Number and Percentage of Adults and Children, Shelby County, 2000-2006



Source: U.S. Census Bureau, 2000 and American Community Survey, 2002-2006

### Number and Percentage of Adults and Children, City of Memphis, 2000-2006



Source: U.S. Census Bureau, 2000 and American Community Survey, 2002-2006

## **Nearly as many children in Shelby County as FedEx employees worldwide.**

Also unchanged was that 28 percent of the county's population (254,143) in 2006 consisted of children under 18, and 27 percent of the City of Memphis population (175,996) was comprised of children under 18.

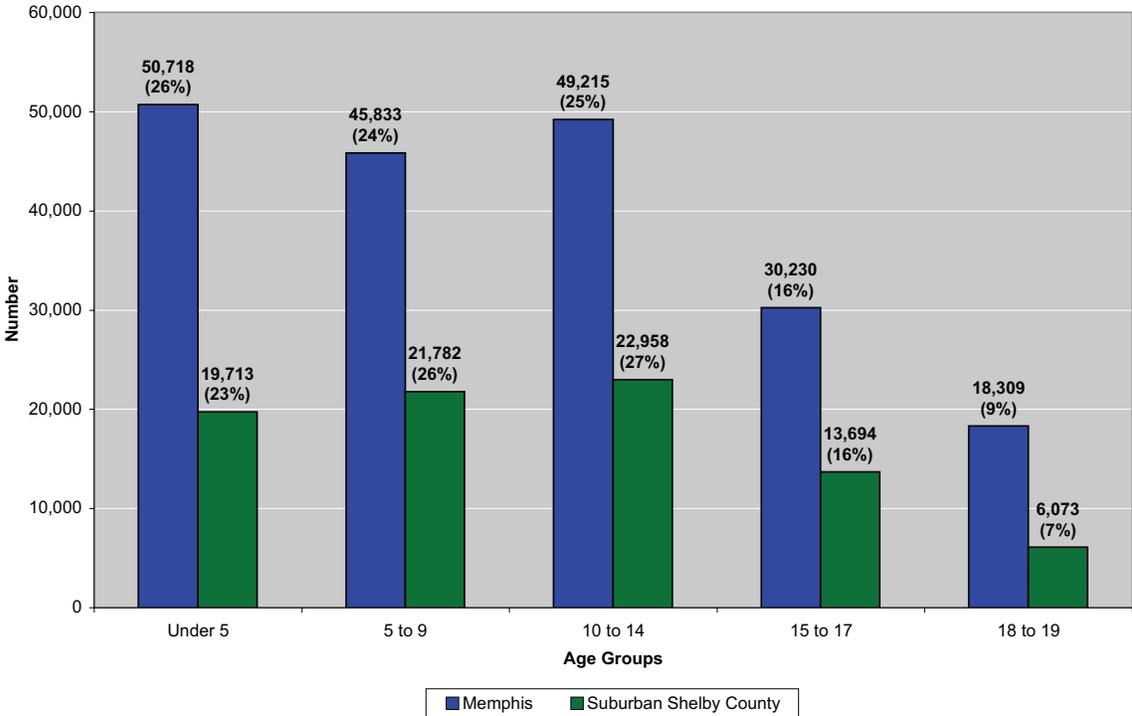
The 175,996 children who resided within the city of Memphis could fill the Liberty Bowl almost three times.

## **Nearly twice as many children under 5 in Shelby County as MATA passengers on an average weekday.**

In 2006 more than one in four (70,431, 26%) children in Shelby County were under 5. This under-5 age group is the largest cohort of children in the county.

Children in the suburbs are older. In the portion of Shelby County that does not include Memphis the largest cohort of children was between the ages of 10 and 14.

### Number and Percentage of Children by Ages City of Memphis & Suburban Shelby County, 2006



Source: American Community Survey, 2006

The 2006 American Community Survey includes an estimate that 349,838 children under 18 lived in the Memphis Metropolitan Statistical Area (MSA), comprised of Shelby, Fayette and Tipton Counties in Tennessee Crittenden County, Arkansas and DeSoto,

Marshall, Tate and Tunica Counties in Mississippi.

Nearly three out of four (256,783) children who lived in the Memphis MSA resided in Shelby County.

## Memphis-area children not representative racially of Tennessee or the nation.

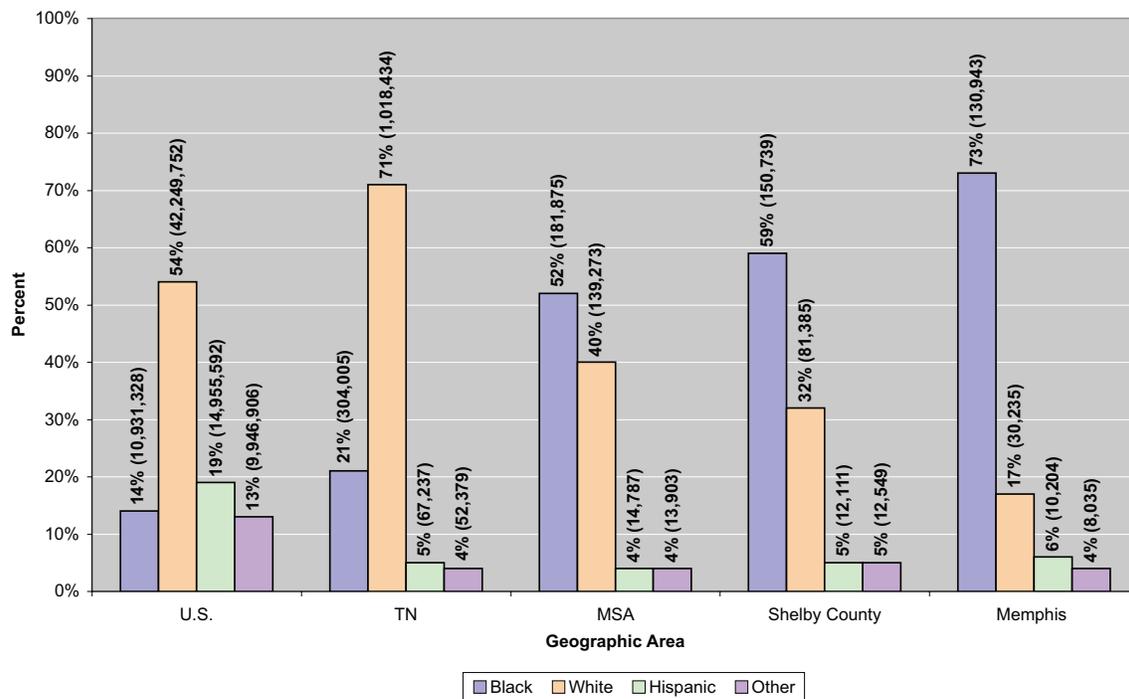
Racial compositions of the Memphis MSA, Shelby County and the City of Memphis vary considerably from the nation and from Tennessee.

In fact, in 2006 the racial makeup of children in the City of Memphis was nearly opposite that of Tennessee with 83 percent of children

were non-white or Hispanic as compared to the state's 30 percent non-white or Hispanic child population. Slightly more than half of all black children in Tennessee live in Shelby County.

Six out of every seven black children in Shelby County live in the City of Memphis.

Number and Percentage of Children by Race and Ethnicity, U.S., TN, MSA, Shelby County & the City of Memphis, 2006



Source: American Community Survey, 2006

## Overall birth rate and single-mother birth rate are consistent.

There have been between 14,000 and 15,000 births per year in Shelby County from 2000 through 2005. The average age of first-time mothers in Shelby County is 23, which is marginally younger than the national average age (25) of first-birth mothers. (*Center for Disease Control*)

Also consistent is the fact that more than 50 percent of children in Shelby County were born to single mothers, and that number is rising.

The differences in the outcomes of children born to unwed parents from children born to married parents, are vast and alarming. Children born to unwed parents are at a greater risk of suffering economic hardship and a range of obstacles associated with financial insecurity. (*Child Trends, www.childtrendsdatabank.org/indicators/13teenbirth.cfm*)

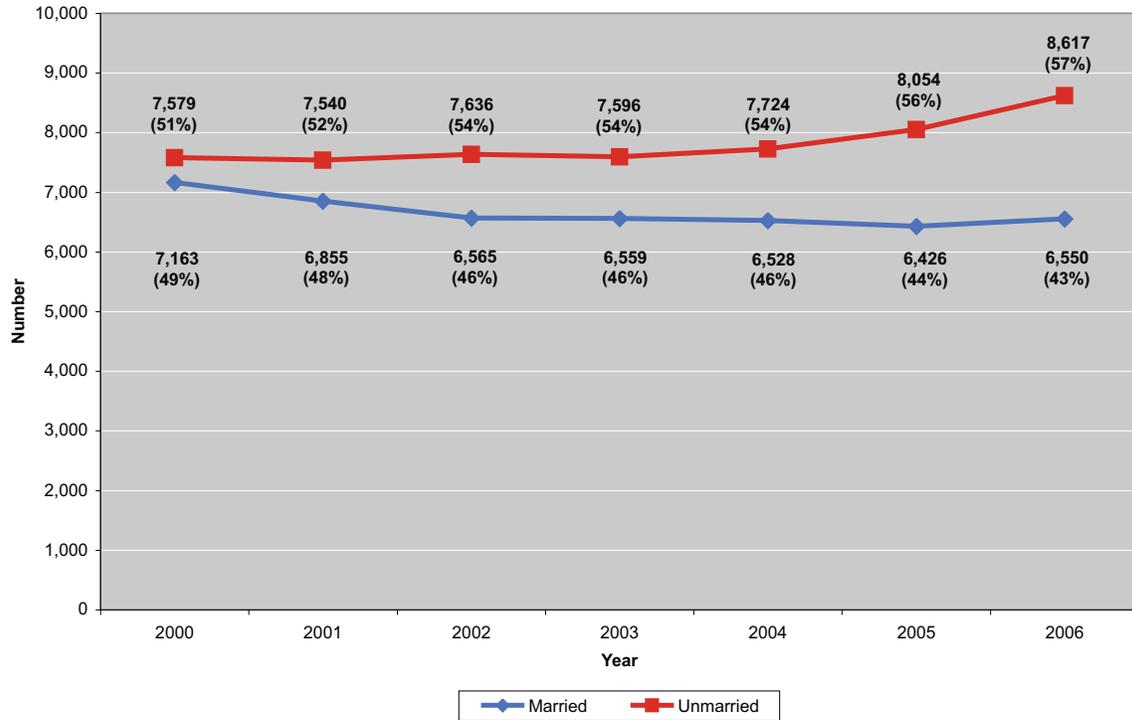
## The economic hardships of single mothers have ripple effects.

The economic hardships associated with children of an unmarried parent have been linked to transience. Transience makes it impossible for a child to remain enrolled in the same school district and to establish meaningful and secure relationships within a community. Thus, children who are reared by unwed parents are more likely than their counterparts to drop out of school. (*Astone & Upchurch, 1994; Wu & Martinson, 1993*)

Lower levels of educational attainment among children of unwed mothers result in lifetimes of lower occupational status and earning potential. (*Amato, 2005*)

Moreover, the cycle is perpetuated as children born to, and reared by, unwed parents are at a greater risk of having their own children out of wedlock, having troubled relationships and reporting more symptoms of depression than their counterparts. (*Amato, 2005*)

### Number and Percentage of Births by Marital Status, Shelby County, 2000-2006



Source: State of Tennessee Department of Health Birth Certificate Data, 2000-2005 and American Community Survey, 2006

## Children of adolescent and teenage single mothers are at great risk.

The children who suffer the most fragile conditions are those born to single, teenage or adolescent mothers. A teen parent traditionally is financially insecure. Younger mothers also are also more likely to be psychologically and emotionally immature. (*ChildTrends*, [www.childtrendsdatabank.org/indicators/13teenbirth.cfm](http://www.childtrendsdatabank.org/indicators/13teenbirth.cfm))

In Shelby County fewer than 1,000 children were born to mothers younger than 17. Nevertheless, while that number accounted for only six percent of total county births, it is twice the national average. (CDC)

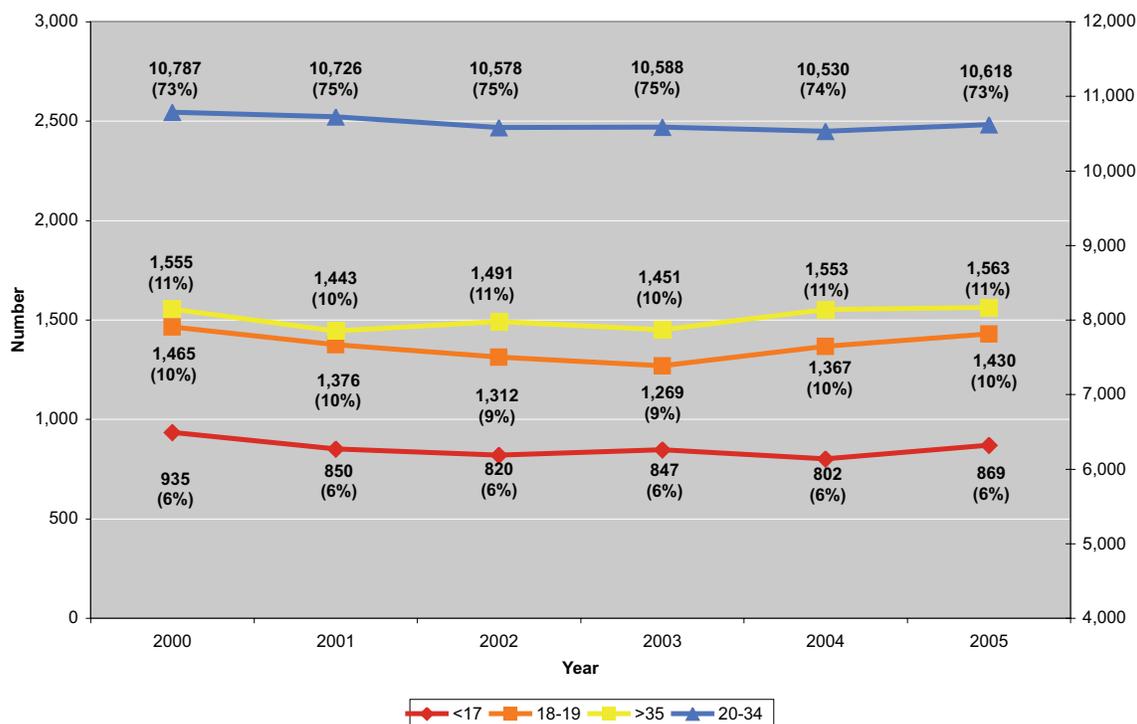
High-risk pregnancies are not isolated to young mothers. Women who give birth at 35

and older are more likely to deliver pre-term than mothers between the ages of 20 and 34. (*Pre-term Births: Causes, Consequences, and Prevention*, 2006)

Additionally, diabetes and hypertension are more prevalent among older women, and infants born to mothers with these conditions are more likely to exhibit “growth restriction, pre-eclampsia and abruption.” (*Ibid*, 44)

A relatively small cohort, approximately 1,500 infants (11%), was born to women 35 and older.

**Number and Percentage of Births to Women by Age, Shelby County, 2000-2005**



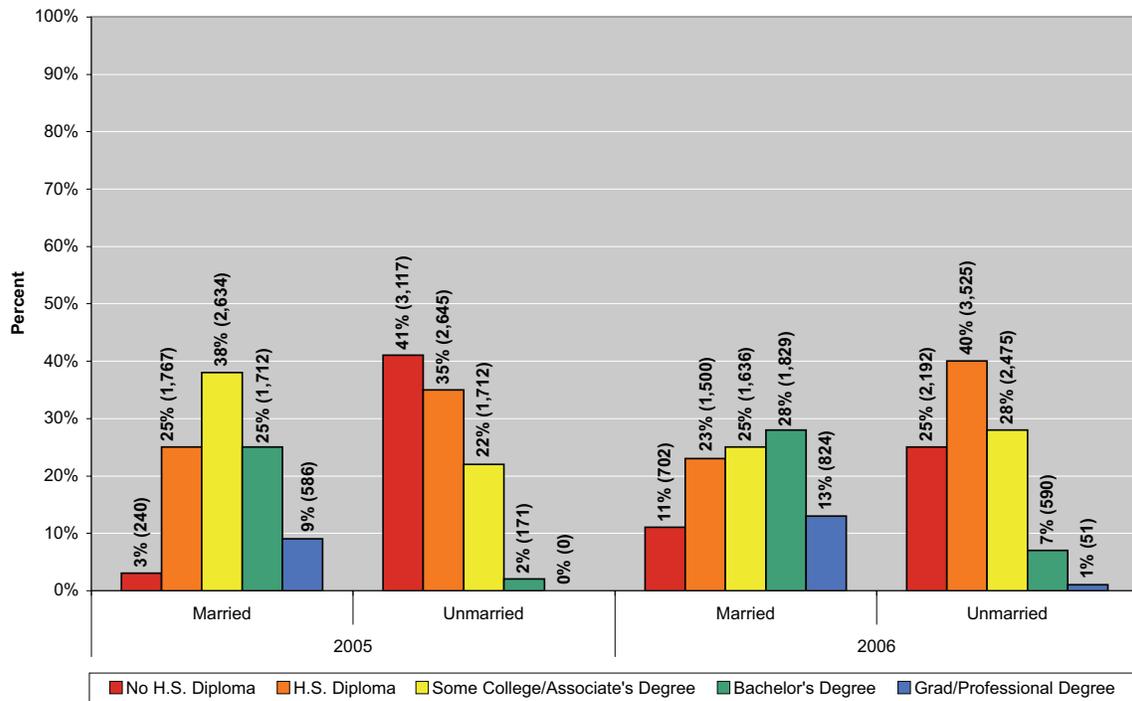
Source: State of Tennessee Department of Health Birth Certificate Data, 2000-2005

## Is there a light at the end of the single-mother educational tunnel?

One out of four (2,192) single mothers who gave birth in Shelby County in 2006 did not have a high school diploma. Although these figures are grim, this cohort was 16 percent (925) smaller than that of 2005. Furthermore, this cohort also demonstrated educational gains from 2005 to 2006. In 2006, six percent more (470) single mothers had a bachelor's degree or beyond than in 2005.

Married women who gave birth in Shelby County in 2006 were much more likely to have high school diplomas and bachelor's degrees than were unwed women.

**Number and Percentage of Women 15-50 Years-Old Who Had a Birth in the Past 12 Months by Marital Status and Educational Attainment, Shelby County, 2005 and 2006**



Source: American Community Survey, 2005-2006.

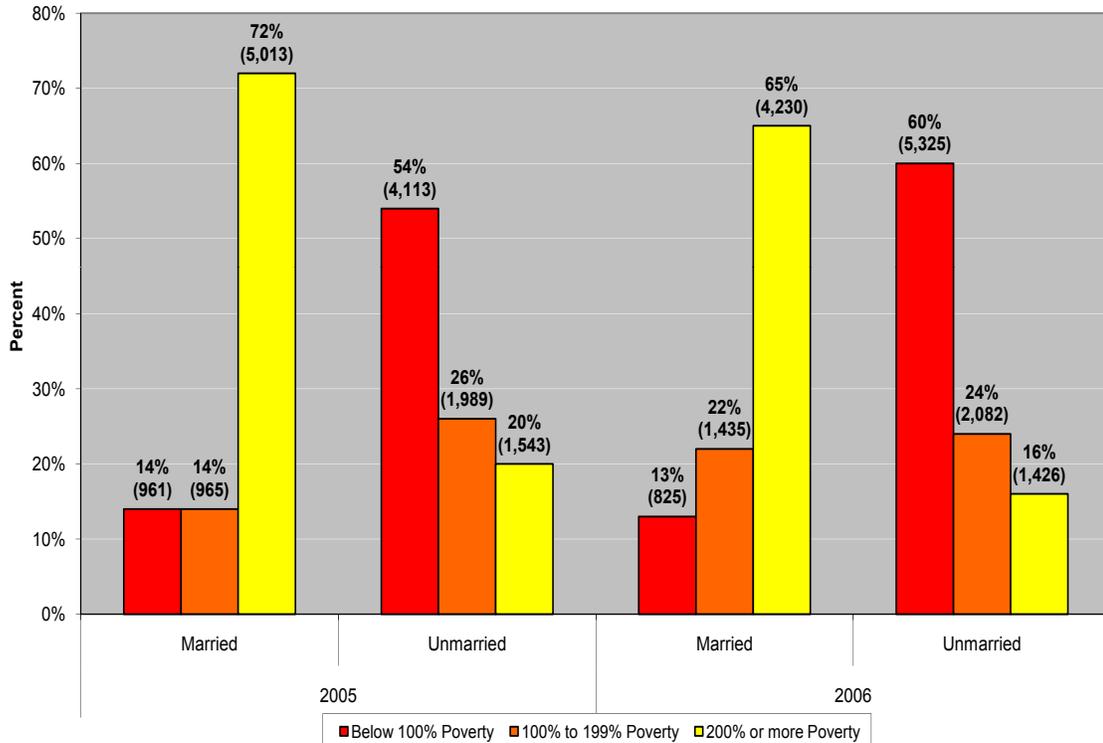
From 2005 to 2006, however, the percentage of both married and unmarried mothers who were living above low income decreased by seven percent and four percent, respectively. This is a disturbing indication of increasing financial insecurity for children in all families.

While the percentage of unmarried women living below 100 percent of the Federal Poverty Level (FPL) increased significantly (11%), the percentage of married women living below 100 percent of FPL decreased by one percent.

The percentage of fragile families of married mothers living between 100-199% of FPL rose by eight percent as a result of the seven percent decrease in those living above 200 percent of FPL.

Unmarried mothers living between 100-199% of FPL decreased marginally (2%) between 2005 and 2006.

**Number and Percentage of Women 15-50 Years-Old who Had a Birth in the Past 12 Months by Marital Status and Poverty, Shelby County, 2005 & 2006**



Source: American Community Survey, 2005-2006

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# Health Domain



## The status of child health says a lot about the value system of a community.

Many believe that the status of, and commitment to, child health in a community reflects the values, overall health and well-being of the community.

How child health is measured varies. For some it's a measure of a few commonly accepted markers. These typically include infant mortality rates, immunization rates, hospital admission rates, child death rates, etc. Others take a broader view and see child

health status as a measure of those items plus many of the environmental factors that influence a child's overall well-being. Among these are the proportion of children living in poverty, school drop-out rates, proportion of children engaged in risky behaviors, educational achievement, gang involvement and exposure to environmental toxins.

## Shelby County ranks near bottom in a near-bottom-ranking state.

One source that includes quality-of-life issues in child health is the Annie E. Casey Foundation's *Kids Count* report. In the *Kids Count 2007* report, Tennessee ranked 43rd of the 50 states, and in most measurements Shelby County lagged behind the rest of the state.

The data on child health in Shelby County are grim. After several years of decline the infant mortality rate in Shelby County has risen for both black and white babies. However, the proportion of all infants born weighing less than 2,500 grams (low birth-weight), is now lower than the state proportion. A hopeful sign is the increased interest in identifying proven interventions to improve child health in Shelby County.

## Infant mortality rate reflects a community's overall health.

The infant mortality rate (IMR) is the number of deaths that occur in the first 12 months of life per 1,000 live births. It is one measure of the overall health of a community and reflects, to some degree, the commitment of a community to infants and young mothers. It is also one indicator of access to care, quality of care, socioeconomic conditions and public health intervention. Despite the fact that, nationwide, one out of every six dollars is spent on healthcare, the U.S. has a higher IMR than many other nations.

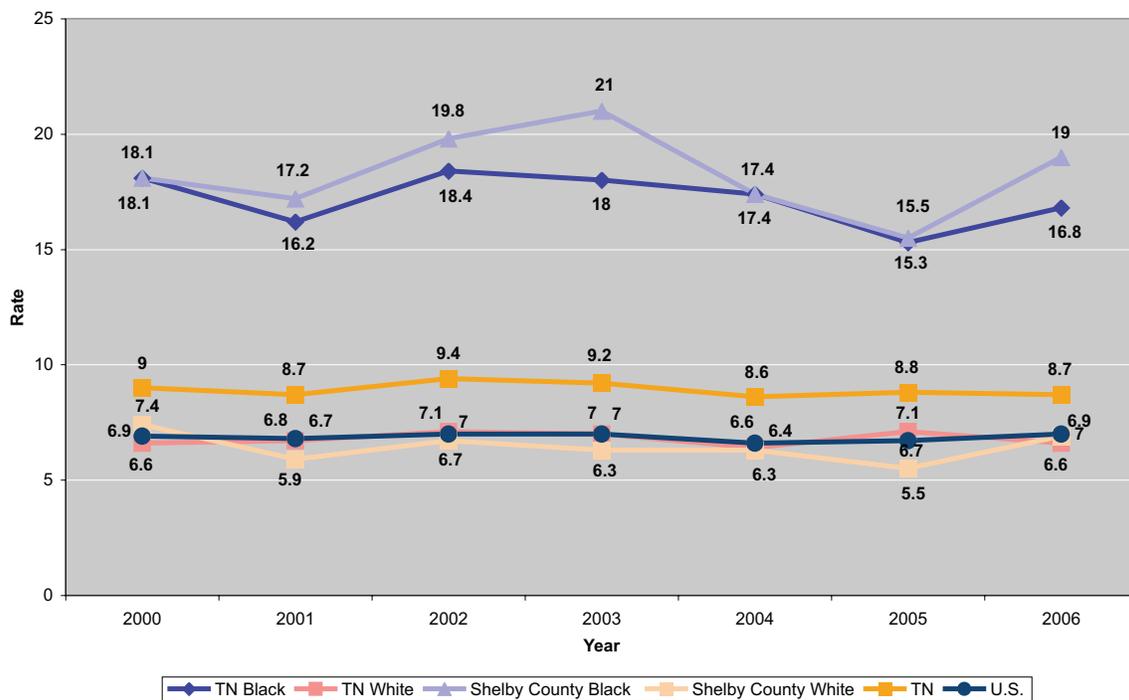
Infants who die within the first month of life are usually those who are born very prematurely or with serious congenital anomalies, particularly of the cardiovascular system and/or respiratory tract. Infant deaths after one month and before 12 months are most frequently a result of Sudden Infant Death Syndrome (SIDS), congenital malformations or accidents.

## The black IMR in Shelby County is more than double the U.S. rate.

The black IMR in Shelby County remains almost triple the rate among white infants in Shelby

County and the overall U.S. rate. In 2006 both the black and white IMRs rose.

Infant Death Rate per Thousand Births by Race, U.S., Tennessee, Shelby County, 2000-2006



Source: Tennessee Department of Health, Vital Statistics, 2000-2006.

- The basis for the difference in mortality rates between black and white infants is complex. Black infants are more likely than whites to be born prematurely and at a low birth-weight.
- Blacks as a group have less income than whites, but the correlation between poverty and infant mortality is inconsistent.
- Among black and white mothers, the higher the educational level, the lower the infant mortality rate. Nevertheless, college-educated, non-smoking black women have a slightly higher IMR than do smoking white women who have not graduated from high school.

- Full-term black infants have a higher mortality rate (1.74 times) than a full-term white infants.

The reasons are unclear for the increase in infant mortality in Shelby County since 2005. The State of Tennessee has made a major commitment to reduce infant mortality. Since Memphis has one of the state's highest IMRs the state has devoted resources to specifically address the issue in Shelby County. Hopefully, improved interventions will have an effect, and there will be a future decline in the IMR.

## Low birth weight is hard to overcome.

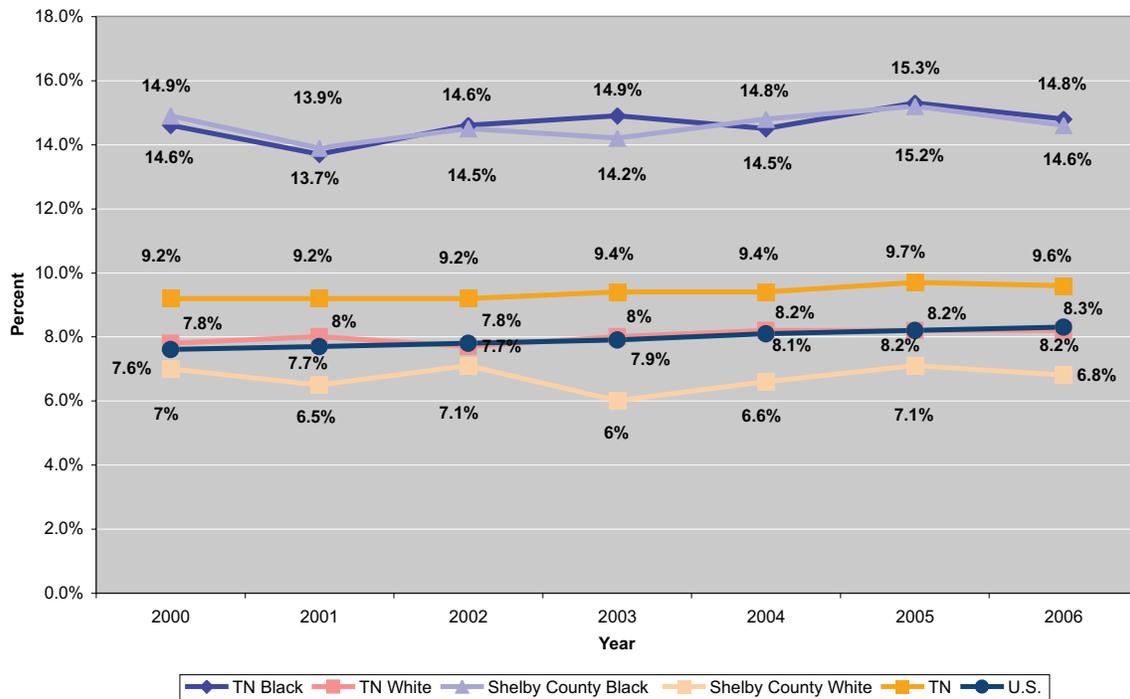
The earlier during gestation that an infant is born the greater the risk of death. Two out of three infants who die in the first year of life are born at less than 37 weeks gestation and are considered *premature*. While low birth-weight does not correlate exactly with gestational age, it frequently is used as a measurement of premature birth because determining exact gestational age is often difficult.

- Babies born weighing 2,500 grams (5 pounds, 8 ounces) and above, have a mortality rate of 3.3-per-1,000 live births.
- Low birth-weight infants (1,500-2,499 grams) die at a rate 18 times higher.
- Very low birth-weight infants (less than 1,500 grams at birth, or less than 3 pounds, 5 ounces) have an IMR of 256 per 1,000, or 77 times higher than that of normal birth-weight infants.
- Reduction in premature births should reduce the number of infant deaths.

The rate of low birth-weight/premature births has increased nationwide. In both Tennessee and Shelby County, the rate of low birth-weight newborns has remained flat over the past six years. An increasing percentage of premature infants are born after 32-37 weeks of gestation.

At the same time, there has been a slight decrease in those born before 32 weeks gestation, which is the group at highest risk. This trend, along with the improved care provided for premature babies, should ultimately contribute to an improvement in the IMR.

### Percentage of Low-Weight Births, Shelby County, Tennessee, & U.S., 2000-2006



Source: Tennessee Department of Health, Vital Statistics, 2000-2006

As with mortality rates, there is also a difference in the percentage of low birth-weight infants born to black mothers compared to white mothers.

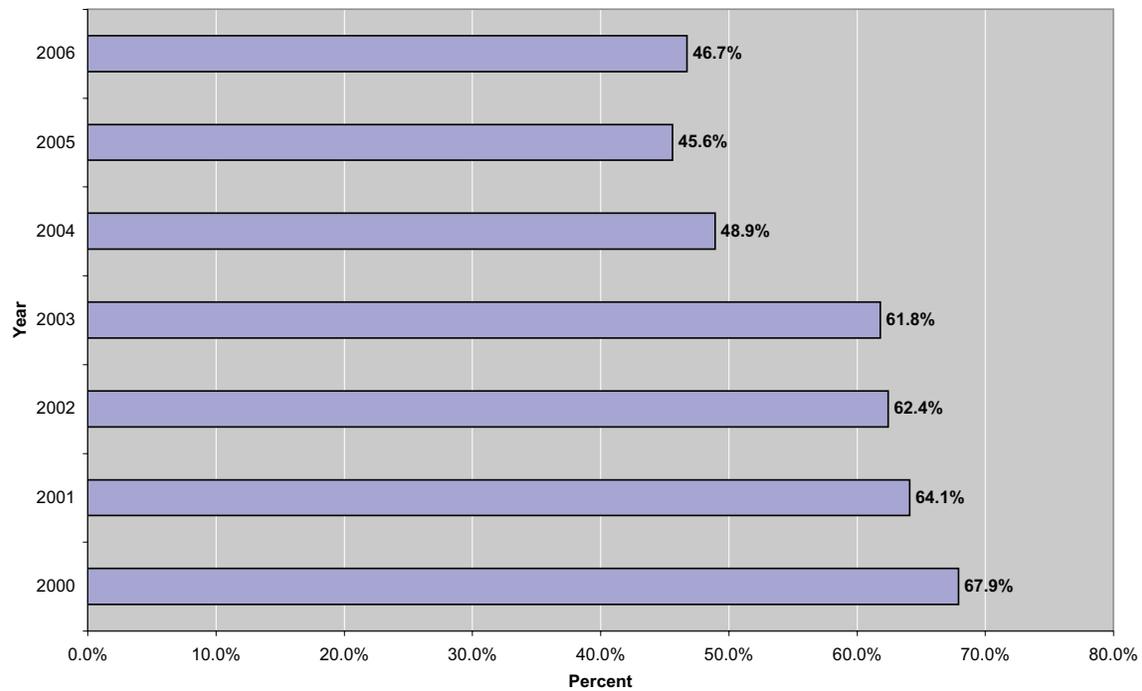
Black mothers are more than twice as likely to have premature babies than white mothers.

### The number of women who receive adequate prenatal care has declined by 21 percent.

Prematurity and low birth-weight are influenced by social, economic, biological and genetic factors. Earlier prenatal care improves the health of both the mother and the fetus and contributes to a reduction in infant mortality.

A disturbing trend in Shelby County is a 21 percent decline in mothers who received adequate prenatal care from 2000 to 2006. There was a slight improvement (1.1%) in 2006 over 2005, but adequate prenatal care remains a serious problem in Shelby County.

### Percentage of Mothers with Adequate Prenatal Care, Shelby County, 2000-2006



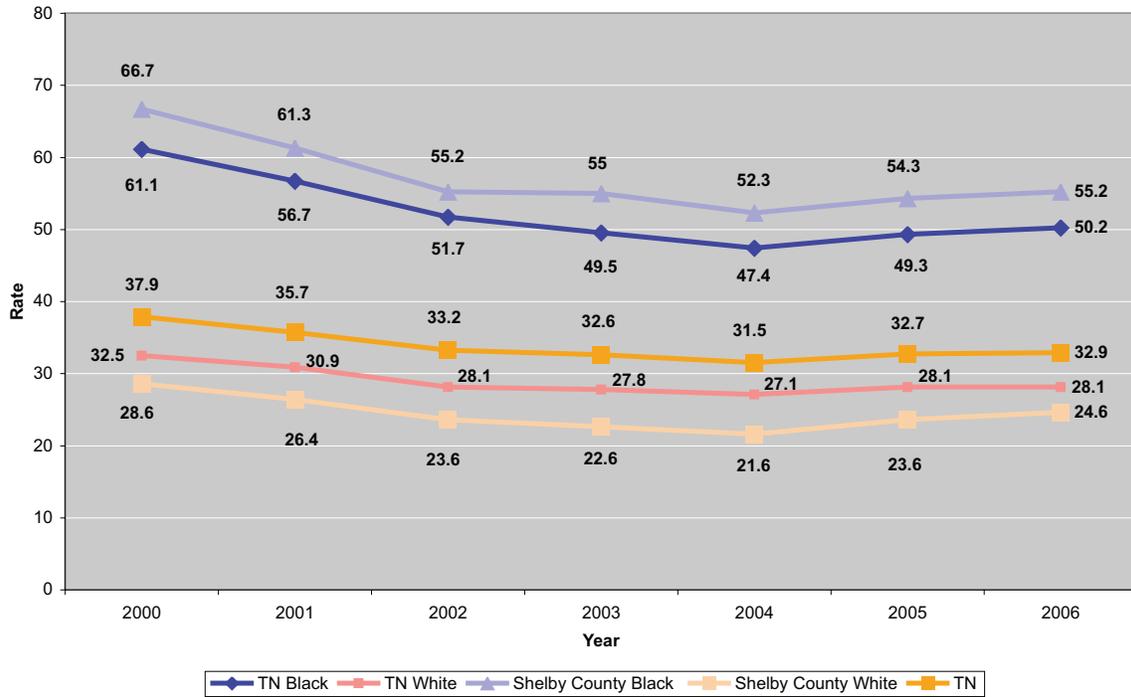
Source: Annie E. Casey Foundation, CLIKS Online, 2000-2006

### The risks for children of teenage mothers continue throughout life.

Pregnant women at greatest risk for delivering prematurely are those who are less than 20 years old at the time of delivery and those in their late 30s and older. Of the 15,000 births in Shelby County about 12 percent are to teenage mothers. In addition to having a higher IMR, children of teenage mothers are also likely to grow up in poverty and have poor health.

Birth rates among teenagers nationally have been declining steadily since 1960. In Tennessee and Shelby County there were substantial declines in teenage births from 2000 to 2004. In 2004, however, birth rates among black and white teenagers in Shelby County and black teenagers statewide began rising again.

### Birth Rate Per Thousand Females Ages 10-19 by Race, Shelby County & Tennessee, 2000-2006



Source: Tennessee Department of Health, Vital Statistics, 2000-2006

The birth rate among black females 10-19 years old is about two and a half times greater than that of white girls 10-19. Among both black and white girls the birth rates decreased by 17 percent and 14 percent, respectively, from 2000 to 2006.

Programs focused on reducing teen pregnancy vary widely. Some advocate abstinence, others the use of contraception. One factor that contributed to the decline in teenage pregnancy was a greater willingness among adults to discuss teenage pregnancy and sexuality and

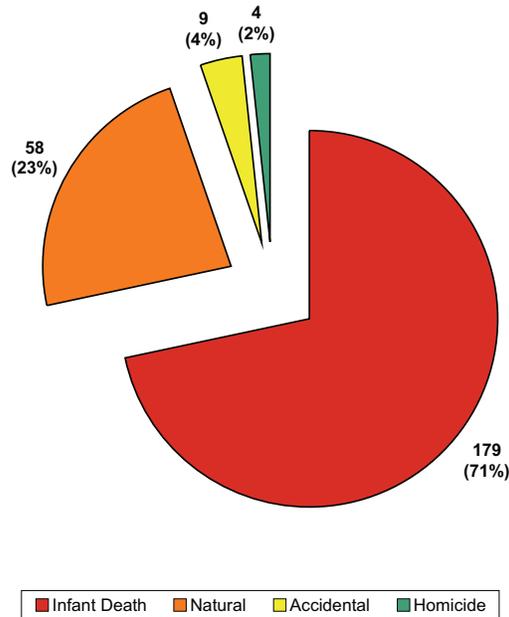
to recognize the problems faced by teenage mothers. It is unclear, though, what has contributed the most to cause the decline. (Institute of Medicine. *Preterm Births. Causes, Consequences, and Prevention*. Behrman RE and Butler AS eds. 2006; March of Dimes Peristats. [MarchofDimes.com/peristats/](http://MarchofDimes.com/peristats/); Annie E. Casey, *Kids Count. CLICKs*; Child Trends Data Bank)

## 71 percent of deaths in Shelby County in the first 14 years occur in infancy.

In Shelby County nearly three out of four children who die before age 15 die in the first year of life. Of deaths between one and 14 years in Shelby County more than one in four is due to natural causes.

These include deaths from congenital anomalies and genetic conditions, infectious diseases and malignancy. Of the remaining deaths in this age group the majority is due to “unintentional injuries” (accidents).

Child Death Rate per Thousand Births, Age 0-14, by Cause, Shelby County, 2000-2006



Source: Shelby County Health Department 2006.

The 2005 national data for 15 to 19 year-olds showed that 50 percent of deaths were due to accidents, 15 percent to homicides, 12 percent to suicides and five percent to malignancy.

While these data are not available for Shelby County, it is likely that they would reflect a similar pattern. (Martin JA et al, *Annual summary of vital statistics: 2006, Pediatrics*. 2008; 121:4, 778-802)

## High-risk adolescent behavior extends into adulthood.

Many high risk behaviors established during childhood or adolescence are continued into adulthood and contribute to depression and death. Adolescent alcohol and drug use contribute to motor vehicle accidents, unintentional injuries, homicide and suicide, all of which account for 71 percent of deaths among persons 10 to 24.

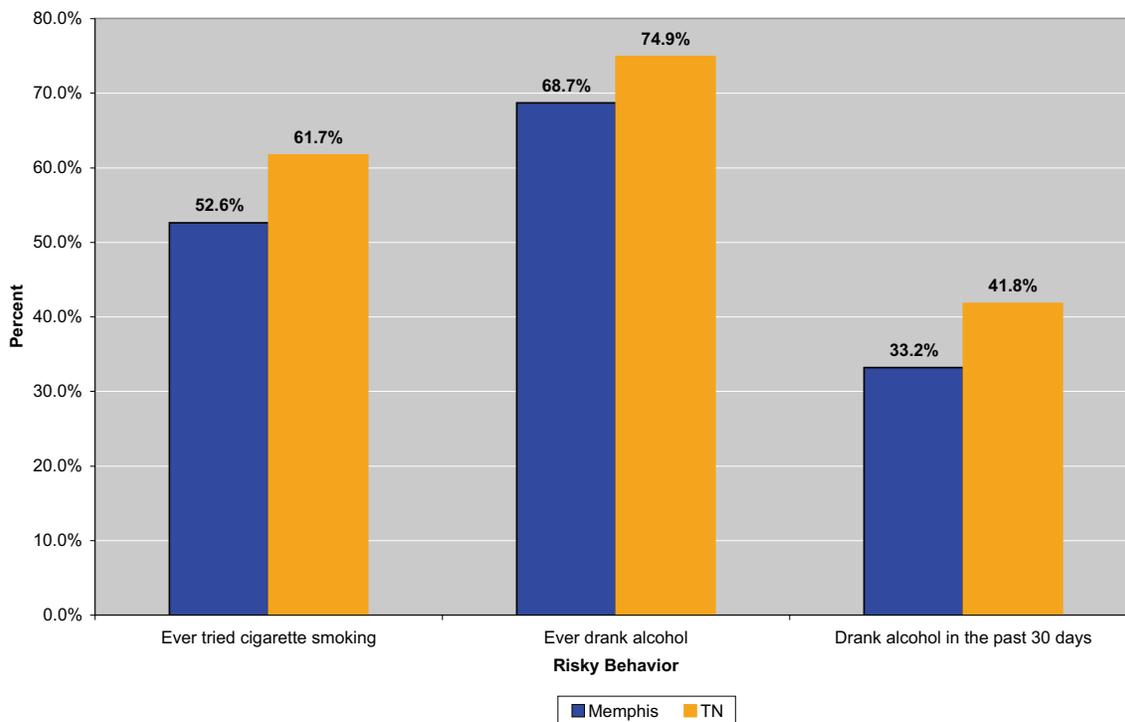
Likewise, unhealthy diet, lack of physical activity and tobacco use, all of which are strongly linked to cardiovascular disease and cancer, are also prevalent among youth. In addition to affecting this generation, these high risk behaviors also have the potential to have negative effects on future generations.

## Smoking remains a serious problem.

Tobacco use is the most common cause of preventable disease and death in the U.S., and it begins most commonly in adolescence or early adulthood. Eight out of 10 adult smokers began smoking before age 20. Of people who start smoking as teens approximately one out of three will die prematurely of a smoking-related disease. Furthermore, tobacco is considered to be a gateway drug that may lead to alcohol, marijuana and other illegal drug use.

More than half of Memphis City Schools (MCS) high school students and 40 percent of MCS middle school students reported having tried cigarettes. While these numbers are lower than those reported by students throughout Tennessee, and less than five percent of students report smoking cigarettes daily, we should not become complacent about tobacco use among children and adolescents.

Percentage of "Risky Behavior" by Adolescents,  
Memphis & Tennessee, 2005



Source: Youth Behavioral Risk Surveillance Survey, 2005

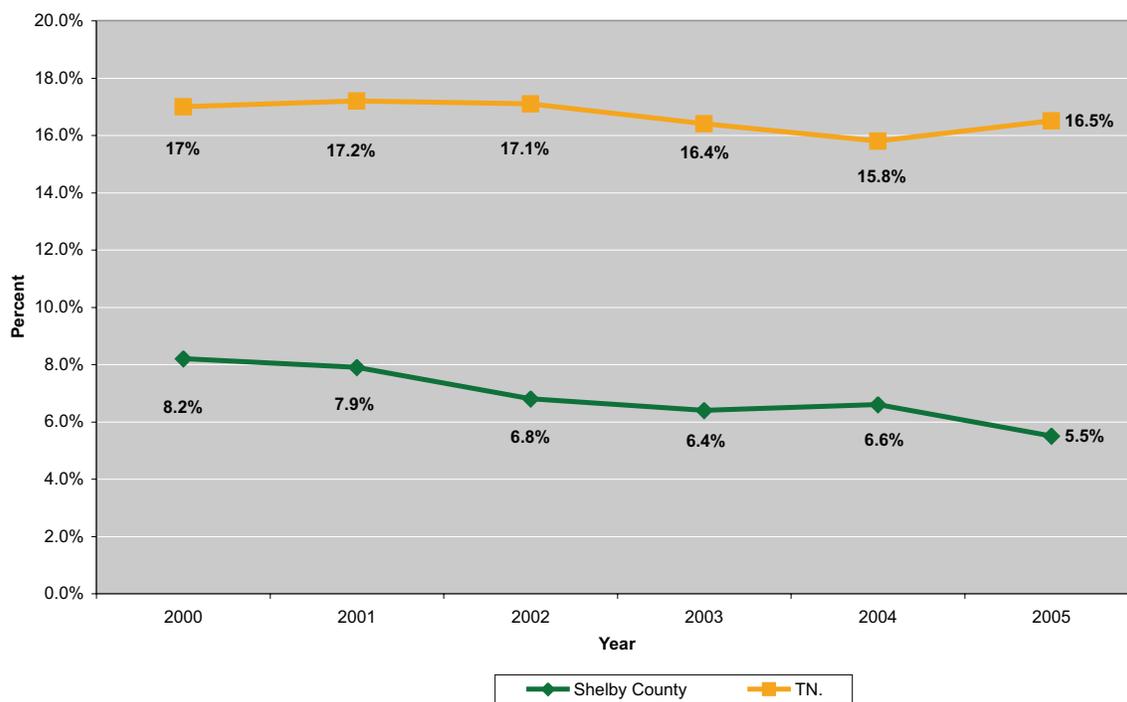
Smoking also has a negative impact on younger children. Environmental Tobacco Smoke (ETS), also known as second-hand smoke, contains 4,000 chemicals that infants and children breathe whenever someone smokes around them. Children who breathe ETS are at risk for many serious health problems, such as ear infections, hearing problems, respiratory infections and asthma.

(Committee on Environmental Health, *Environmental Tobacco Smoke: A Hazard to Children. Pediatrics* 1997 99: 639-642)

Additionally, smoking during pregnancy can lead to pregnancy complications and serious health problems in newborns. Babies born to mothers

who smoke are twice as likely to be born of low birth-weight and are three times as likely to die from Sudden Infant Death Syndrome (SIDS). The U.S. Public Health Service estimates that if all pregnant women in the United States stopped smoking there would be an 11 percent reduction in stillbirths and a five percent reduction in newborn deaths. (*March of Dimes, [http://www.marchofdimes.com/professionals/14332\\_1171.asp](http://www.marchofdimes.com/professionals/14332_1171.asp)*) Although the rates of women who reported smoking during pregnancy declined between 2000 and 2005, one in 20 women in Memphis reported that she continued to smoke during pregnancy.

**Percentage of Women Who Report Smoking During Pregnancy, Shelby County & Tennessee, 2000-2005**



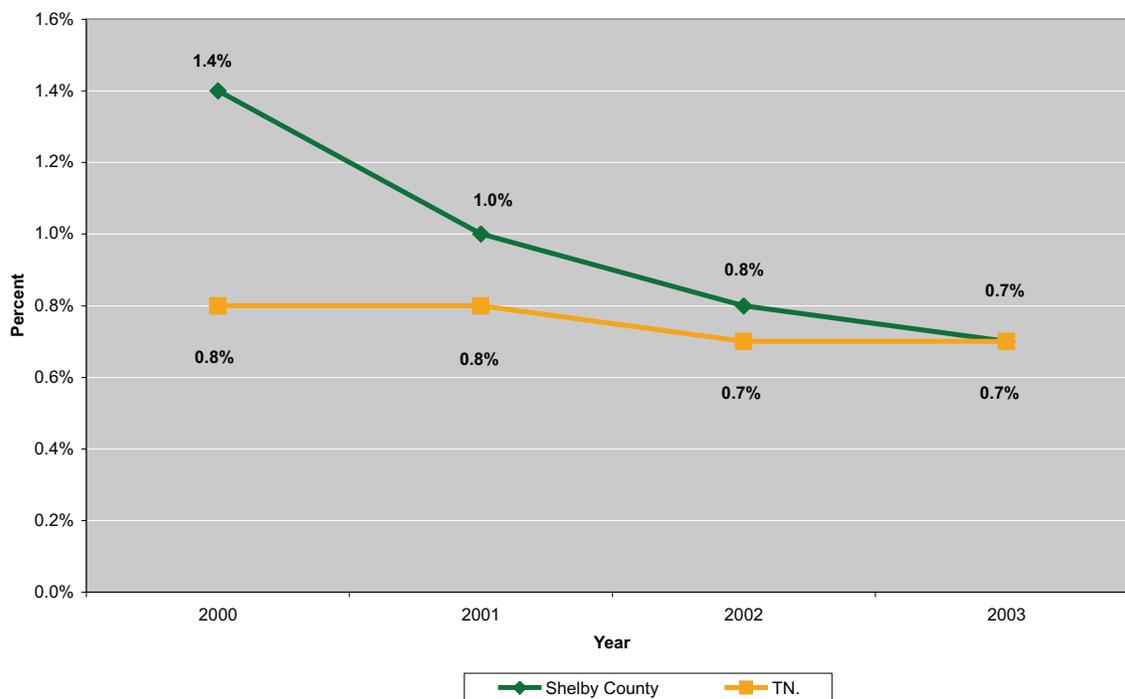
Source: Tennessee Department of Health, Birth Certificate Data, 2000-2005

## Adolescent alcohol use quadruples risk of alcohol dependence.

According to research by the National Institute on Alcohol Abuse and Alcoholism, adolescents who begin drinking before age 15 are four times more likely to develop alcohol dependence than those who do not begin drinking until age 21.

- Alcohol use was reported by two-thirds of MCS high school students and 44 percent of middle school students. One-third of high school students reported use “within the last 30 days.”
- There is mounting evidence that repeated exposure to alcohol during adolescence leads to long-lasting deficits in cognitive abilities, including learning and memory.
- Alcohol use negatively affects school performance and is related to high risk sexual behaviors, depression, suicide and other drug use.
- Adolescent alcohol use has also been associated with an increased risk of physical or sexual abuse, often by persons of the same age. Researchers estimate that alcohol use is implicated in at least one third of cases of sexual assault and acquaintance or date rape cases among adolescents and college students.
- Females who use alcohol while pregnant increase their risk of having complications during pregnancy. They also increase their risk of giving birth to an infant with fetal alcohol syndrome, the most common preventable cause of mental retardation. (*Alcohol and Development in Youth-A Multidisciplinary Overview. Alcohol Research and Health. Volume 28, Number 3, 2004/2005*)
- In 2005 the estimated use of alcohol (had a drink in the last 30 days) in women of childbearing age (18 to 44 years) living in Tennessee was 36.1 percent. Binge drinking (had 5 or more drinks on any one occasion in past 30 days) was 7.8 percent. ([http://www.cdc.gov/ncbddd/fas/monitor\\_table.htm](http://www.cdc.gov/ncbddd/fas/monitor_table.htm))
- The number of women in Memphis who reported using alcohol at any time during their pregnancy is low and declined significantly between 2000 and 2003.

**Percentage of Women Who Reported Consuming Alcohol During Pregnancy,  
Shelby County and Tennessee, 2000-2003**



Source: Tennessee Department of Health, Birth Certificate Data, 2000-2003

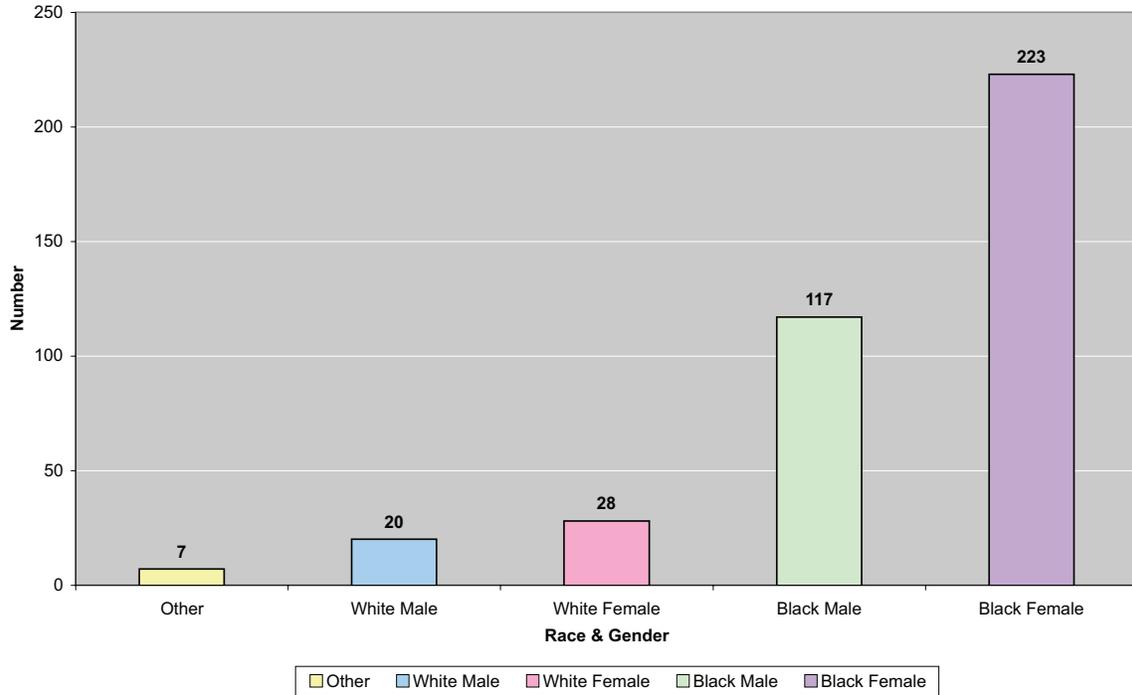
## Poor nutrition and lack of physical activity contribute to obesity and diabetes.

Obesity is an epidemic locally and statewide. The Tennessee Comptroller's Report (March 2006), *"Weighing the Costs of Obesity in Tennessee,"* includes, "State law has recognized Tennessee... with epidemic proportions of childhood obesity, one of the highest rates of pediatric obesity and childhood Type II Diabetes, and one of the highest rates of heart disease in the United States."

Direct medical costs associated with obesity in Tennessee were \$1.84 billion in 2003. Numerous studies have shown that overweight children are more likely to be overweight adults and suffer from complications, such as diabetes, cardiovascular disease, hypertension, stroke, osteoarthritis, gall bladder disease, breast cancer, colon cancer and depression.

Local data from the University of Tennessee Health Science Center (UTHSC) demonstrate the dramatic increase in Type II Diabetes associated with the rise in obesity. Once thought of as an adult disease, even referred to as "adult-onset diabetes," Type II Diabetes used to be rare in children. In 1990, there were four cases of Type II Diabetes in children diagnosed at UTHSC. Since that time there have been almost 400 cases diagnosed. The number of cases peaked in 2002 with 45 new cases diagnosed and now appears to have decreased slightly. Black females are at greatest risk.

### Number of Cases of Type II Diabetes in Children by Race & Gender, 1990-2006

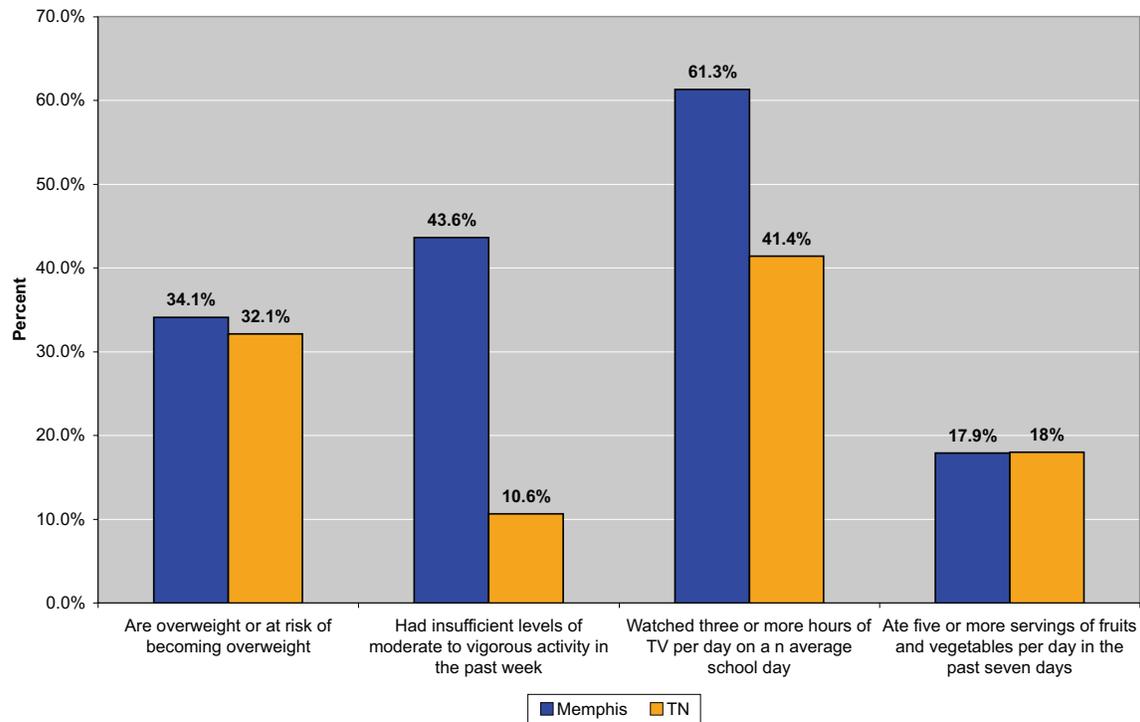


Source: University of Tennessee Health Science Center Le Bonheur Children's Medical Center, Stender, Christensen, Burghen, et al.

Data from the 2005 Youth Risk Behavior Survey, in which students reported their weight and height, indicate that 18 percent of MCS high school students have a body mass index (BMI) in the “at risk for overweight” category and 16 percent “overweight.”

These percentages are consistent with the State of Tennessee (18% and 15%, respectively) but higher than the national percentages (13.1% and 15.7%, respectively).

### Weight, Nutrition and Physical Activity in Memphis & Tennessee, 2005



Source: Youth Behavioral Risk Surveillance Survey, 2005

More than 40 percent of MCS high school students reported inadequate levels of physical activity. This is four times the rate of students statewide.

This is important since many experts consider physical activity to be one of the cornerstones of prevention and/or management of childhood obesity and the associated health consequences. Physical activity has been shown to promote fat loss by increasing lean body mass, increasing energy expenditure and improving the metabolic profile, while at the same time improving psychological well being. Physical activity is also associated with other health benefits, including a reduced risk of premature death, coronary heart disease, hypertension, colon cancer, diabetes mellitus, depression and anxiety. It also enhances ability to perform daily tasks throughout life.

Sedentary behaviors, particularly television viewing, have also been blamed for our childhood obesity epidemic. More than 60 percent of MCS high school students reported viewing three or more hours of TV on an average school day. Research has shown that black and Hispanic children and adolescents tend to participate in fewer vigorous activities and more sedentary activities than whites, with differences noted as early as elementary school. (*Institute of Medicine Preventing Childhood Obesity: Health in the Balance 2005*) These behaviors may cause the differences between Memphis students and students across the state.

## Youth diets are woefully short of fresh fruits and vegetables.

Fewer than one in five students locally or state-wide reported eating more than five servings of fruits and vegetables per day. Although this may seem like a minor health related behavior it likely has significant public health implications.

Fruits and vegetables contain essential vitamins, minerals and fiber that may provide protection from chronic diseases such as heart disease, stroke and cancer by up to 20 percent. It has been estimated that diet might contribute to the development of one third of all cancers, and that increasing fruit and vegetable consumption is the second most important cancer-prevention strategy, after stopping smoking.

## Obesity adversely affects pregnancy and birth outcomes.

Research has shown that obesity increases the risk of adverse outcomes for both mother and baby. These include birth defects, especially neural tube defects, infertility, labor and delivery complications, fetal and neonatal death, maternal complications, such as hypertension, gestational diabetes and pre-eclampsia, and large for gestational age (LGA) infants.

The dramatically increasing rates of obesity and preterm births (PTB) have led to recent investigations of an association of maternal obesity with PTB. Findings suggest that while obesity may not be an independent risk factor for PTB, it does increase rates of medical complications, such as hypertension and diabetes, that have been shown to contribute to PTB. ([http://www.marchofdimes.com/files/MP\\_MaternalObesity040605.pdf](http://www.marchofdimes.com/files/MP_MaternalObesity040605.pdf))

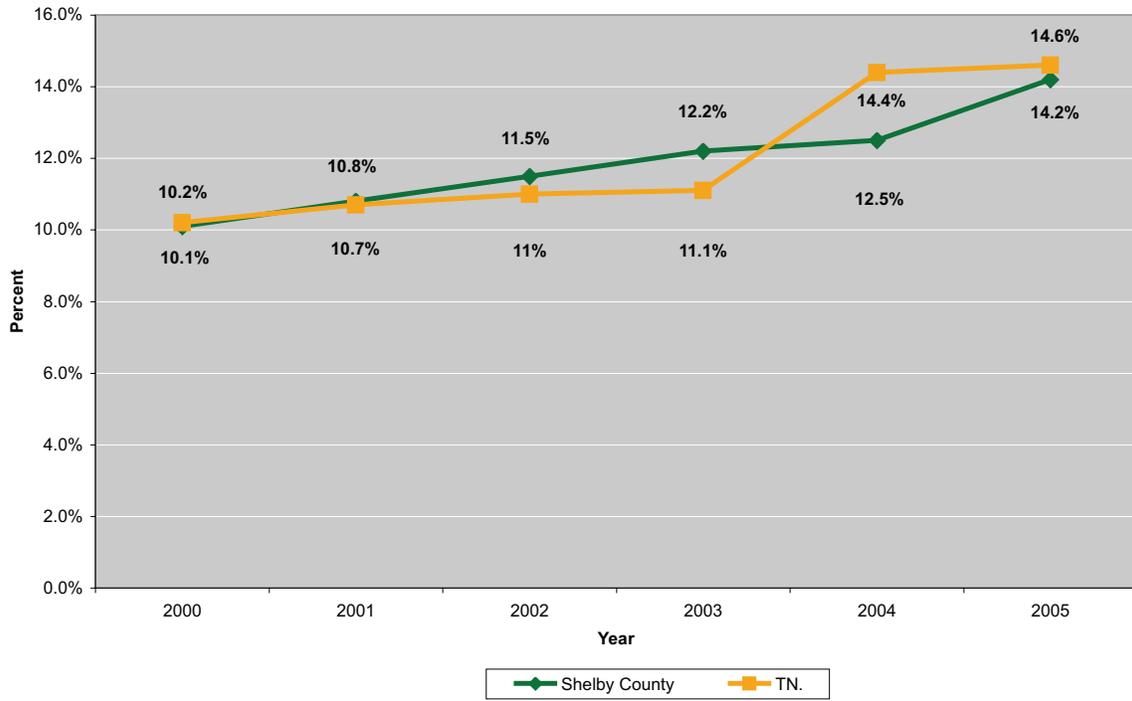
In addition, eating fruit and vegetables can help achieve other dietary goals including increasing fiber intake, reducing fat intake and helping to maintain a healthy weight. (*Dietary Guidelines for Americans, 2005*)

Some fruits and vegetables are also good sources of folate (e.g. green leafy vegetables and oranges). All women of child-bearing age are recommended to increase their consumption of foods naturally rich in folate and foods fortified with folic acid to prevent the development of spinal tube defects. (*March of Dimes, [http://www.marchofdimes.com/prnhec/173\\_769.asp](http://www.marchofdimes.com/prnhec/173_769.asp)*)

All women should gain weight during pregnancy (the amount depending on pre-pregnancy weight), but excessive weight gain can be harmful to both mother and infant. Too much weight gain can cause backache, orthopedic problems, increased varicose veins and fatigue. It may result in an LGA baby, increasing the risk of a Caesarean birth and other problems in the infant, such as birth trauma, hypoglycemia and hyperbilirubinemia. Additionally, excess weight may be difficult to lose after delivery.

The percentage of women in Memphis reporting pregnancy weight gain of more than 50 pounds (excessive at any pre-pregnancy weight) appears to be rising.

### Percentage of Women Who Gained 50 lbs. or More During Pregnancy, Shelby County & Tennessee, 2000-2005



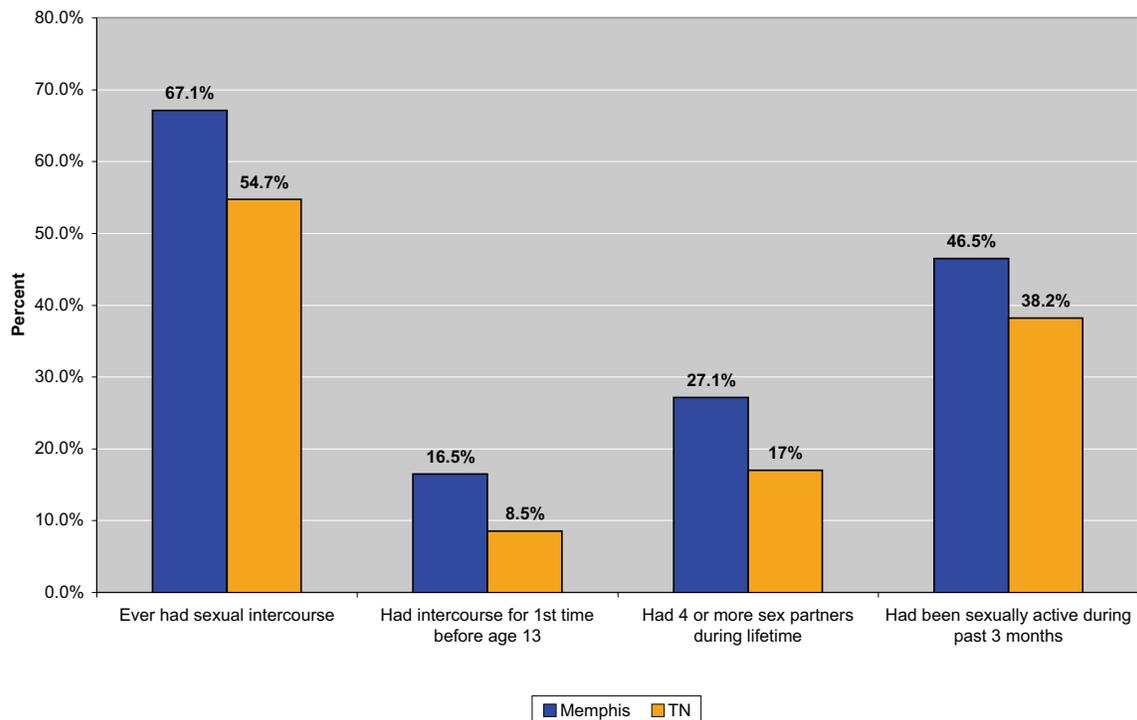
Source: Tennessee Department of Health, Birth Certificate Data 2000-2005

## Shelby County students sexual activity leads to a variety of problems.

High school students in Memphis and Shelby County say they are more sexually active than their counterparts across the state. Also, a higher percentage reports first intercourse before age 13 and having sex with multiple partners. The negative consequences of teen sexual activity can be seen in the high rate of sexually transmitted diseases, pregnancy and early parenting among adolescents in the Memphis area.

Multiple factors place teens at higher risk of engaging in sexual activity. Studies suggest that parental, developmental and peer influences contribute to the early initiation of sexual activity. These include living in a single parent home, the influence of an older sibling, the perception that peers are sexually active, early pubertal development, deviant peer groups, sexual abuse and alcohol and drug use. (*Alan Guttmacher Institute. Family Planning Perspectives. 2001; 33*) Many adolescents in Memphis and Shelby County are exposed to one or more of these risk factors.

**Sexual Activity by Adolescents,  
Memphis & Tennessee, 2005**



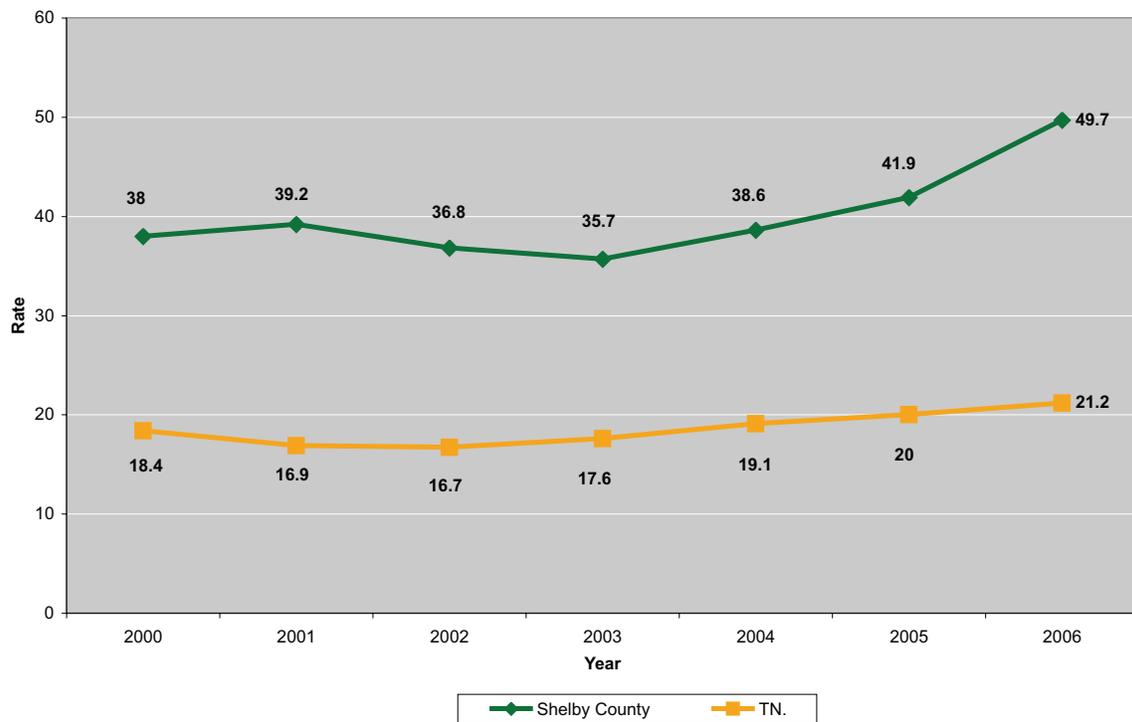
Source: Youth Behavioral Risk Surveillance Survey, 2005

## High sexual activity rates equal high disease rates.

High rates of adolescent sexual activity translate into high rates of sexually transmitted diseases. Almost half of 15 to 19 year-olds in Shelby County have reported being infected with Chlamydia, syphilis or gonorrhea. Consequences of these infections often go beyond short-term difficulties.

In females these infections can lead to scarring of the fallopian tubes and later infertility or complications with future pregnancy. In addition to causing pre-term labor and low birth-weight infants, babies born to infected mothers may be stillborn or have serious congenital malformations and/or infections of multiple organ systems.

Rate per 100,000 of Chlamydia, Gonorrhea or Syphilis in 15-19 Year-Olds, Shelby County, 2000-2006



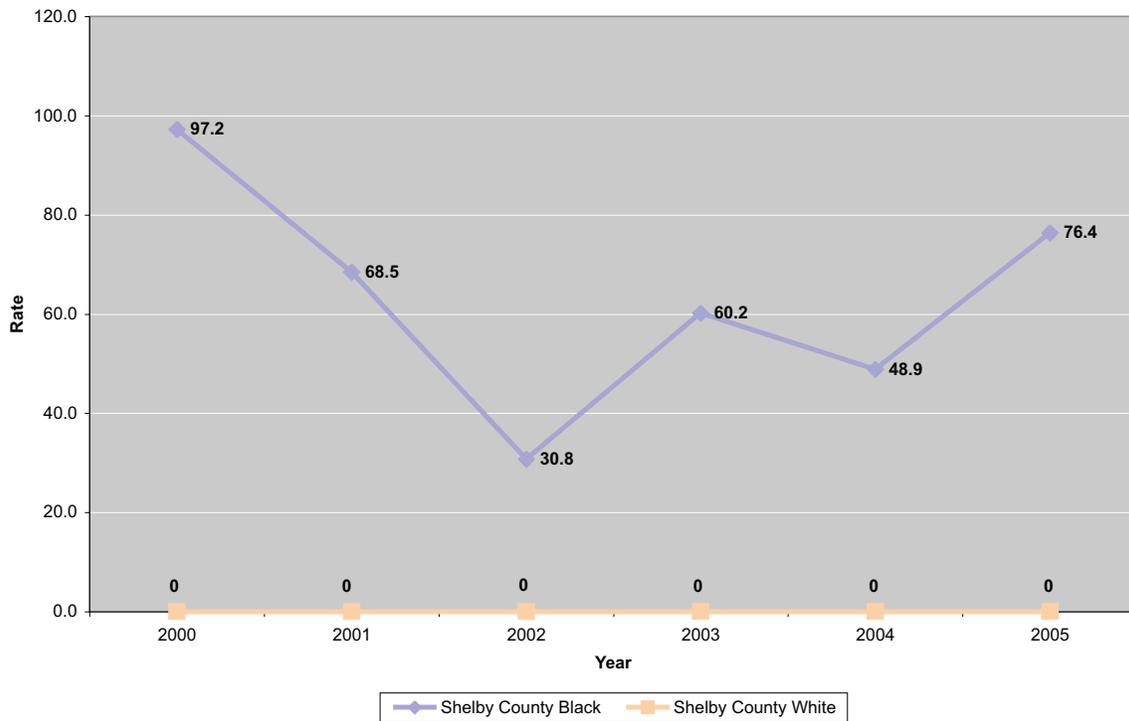
Source: Annie E. Casey Foundation, CLIKS Online, 2000-2006

## HIV remains a constant risk.

Young people in the United States are at persistent risk for HIV infection. This risk is especially notable for youth of minority races and ethnicities. Blacks are affected disproportionately by HIV, accounting for 55 percent of all HIV infection reported among persons aged 13 to 24 in 2004. (<http://www.cdc.gov/hiv/resources/factsheets/youth.htm>) In Shelby County there were 32 cases of HIV/AIDS reported among 15 to 19 year-olds in 2005.

This represents a rate of 76.4 cases per 100,000 population. National comparison data for this age group were not available, but the reported rates for black and white adults and adolescents over 13 years were 97.2 and 10.7 per 100,000 population, respectively. (<http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2005report/table5b.htm>)

Rate per 100,000 of HIV/AIDS in 15-19-Year-Olds by Race, Shelby County, 2000-2005



Source: Shelby County Health Department, 2000-2005

## Glossary

**Body Mass Index** – A measure of a person’s weight in relation to the individual’s height

**Gestation** – The period of time in which a fetus is in the uterus

**Infant Mortality Rate (IMR)** – Deaths that occur in the first 12 months of life per 1,000 live births

**Low Birth Weight** – Weight of an infant that is less than 2500 grams, or about 5 pounds 8 ounces, at birth

**Physical Activity** – Any activity that increases an individual’s heart rate and stimulates hard breathing for part of the time during a total of at least 60 minutes per day

**Premature Birth** – Defines an infant born before at least 37 weeks gestation

**Youth Risk Behavior Survey (YRBS)** – A survey created by the CDC in 1990 to determine how common certain behaviors are among today’s youth. YRBS was administered first in Memphis City Schools (MCS), grades 6 to 12, during the 2003-04 school-year, repeated in 2005-06 and again in 2007-08. Details about the Memphis YRBS are available at <http://www.mcsk12.net/admin/research/YRBS-2003.html>.

**Sudden Infant Death Syndrome (SIDS)** – An unexpected death of an apparently healthy infant in the first year of life for which there is no obvious, identifiable cause

**Adequate Prenatal Care** – The National Center for Health Statistics defines adequate care as a visit to a health professional within the first trimester of pregnancy and additionally as scheduled. A measure of a pregnant woman’s access to prenatal care is based on the Modified Kessner Criteria.

**Type II Diabetes** – A form of diabetes that frequently can be controlled without insulin injections

# Family Home Environment



**Where children are concerned,  
all households are not created equal.**

We know that not all children have access to the same early environment and experiences. Many children in our community grow up in fractured families that are made vulnerable by poverty.

Parents with low levels of education, especially those who have not completed high school, have higher barriers to steady employment than do better-educated parents. As a result, they are more likely to confront poverty and to rely on public assistance to supplement their family incomes.<sup>10</sup> Parents' education levels also correlate closely with children's academic success and overall well-being.<sup>11</sup> Children reared in poverty spend less time reading with their parents and caregivers than do their more affluent peers.<sup>12</sup>

Research shows consistently that the well-being of children is affected primarily by family income,<sup>1</sup> family structure<sup>2</sup> and parents' education level.<sup>3</sup>

Children fare best when:

- They are reared in stable families with more than one caring adult (preferably one or both parents<sup>4</sup>) present.
- Caregivers have steady income that adequately meets the needs of the entire family.<sup>5</sup>
- They have access to health care.<sup>6</sup>
- The community is safe, and neighbors value and respect each other.<sup>7</sup>
- Schools promote a successful learning environment.<sup>8</sup>

Family households in our community take many forms. Some have two parents. Some have only one parent. Some have grandparents who care for grandchildren. The quality of time that children can spend with their caregivers often depends on the resources available to the family. The resources depend on the parents' age and education levels and the stability of the family as a unit.<sup>9</sup>

## **Economically, single-parent and two-parent households vary widely.**

Children have little or no control over their own circumstances. The majority of children in Memphis face different realities from the majority of children in suburban Shelby County.

Many children grow up in families with both parents present. One or both parents works. The family has enough income to thrive. The community is supportive and safe.

Many more children grow up in families with only one parent present. Moving residences and/or changing schools frequently is the norm. The parent or caregiver may be employed precariously, or not at all, and may not have sufficient resources to support the family. Crime is ever-present, and neighborhoods are unsafe.

The community can positively influence these children by investing in early childhood interventions that have demonstrated success in improving the lives of children.

## **Families with children are a shrinking minority.**

In 1956 a majority of U.S. households included children under 18. Parental involvement with school and community programs, such as parent-teacher organizations, was at an all-time high.<sup>17</sup> In 2006 only one in three of the more than 100 million households in the U.S. included a child under 18.<sup>18</sup> In too many households without children, out-of-sight means out-of-mind. Adults who have infrequent contact with children are less likely to place a priority on the well-being of children.<sup>19</sup>

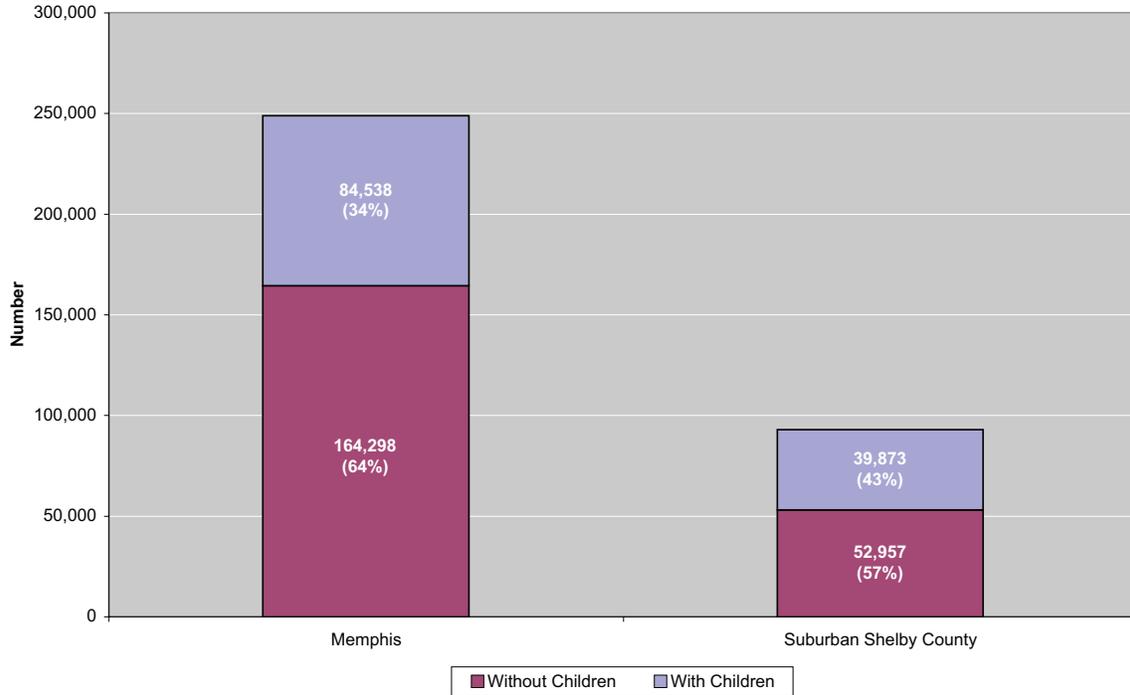
Best practices and proven interventions that mitigate the effects of family and community poverty show tremendous results when implemented and funded fully. These programs have been shown to raise test scores,<sup>13</sup> to help deter crime<sup>14</sup> and to encourage at-risk children to stay in school<sup>15</sup> and delay parenthood.<sup>16</sup>

Early childhood interventions benefit many generations. Children enrolled in the programs benefit directly from quality learning experiences. Parents benefit by being able to work with the peace of mind that their children are receiving quality child care in a healthy learning environment. Future generations of children benefit because the cycle of poverty is broken by reaching children at an early age and setting them on a more successful path.

Consistent with national trends, only one in three households in Memphis and Shelby County had children under 18 present.<sup>20</sup> A slightly higher percentage of households (two in five) in suburban Shelby County had children present.<sup>21</sup>

As the number of households with children in the U.S. and in our community declines, it is difficult to maintain an effective public voice for children.

### Number and Percentage of Households by Presence of Children, Memphis & Suburban Shelby County, 2006



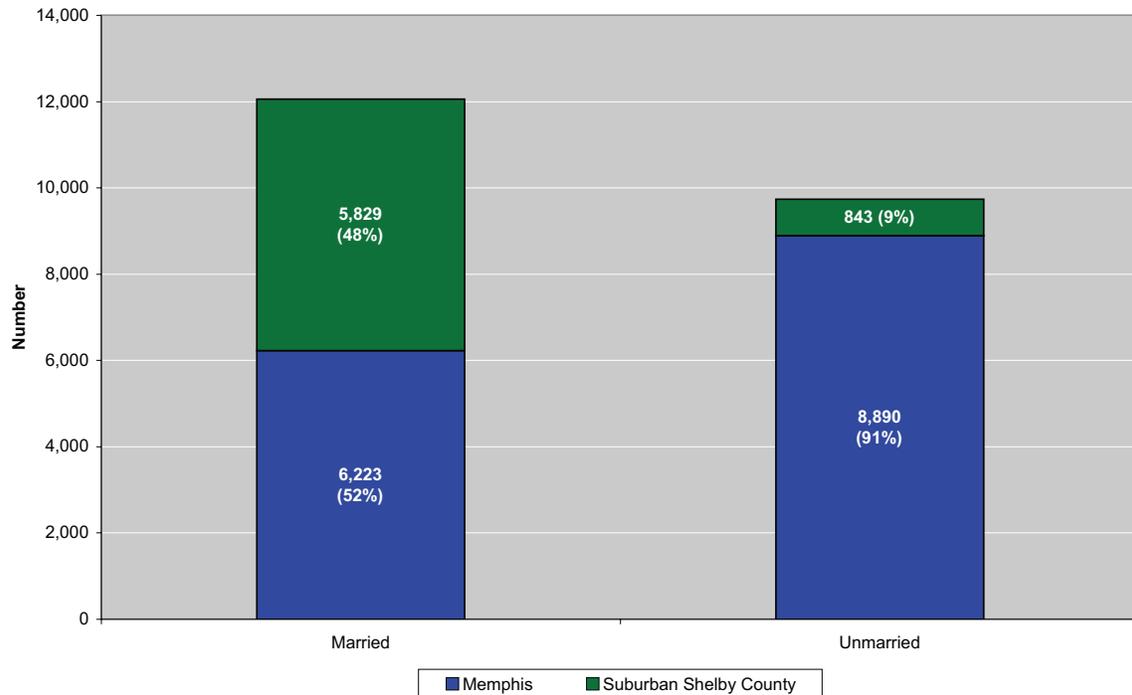
Source: American Community Survey, 2006

### In 2006, 90 percent of very young children in single-parent homes in Shelby County lived in Memphis

More than half of families with very young children in Shelby County (55%) were headed by married couples.<sup>22</sup> Roughly half of very young children who lived with married parents in Shelby County lived in the City of Memphis. The other half lived in suburban Shelby County.<sup>23</sup>

Yet, nine out of 10 very young children who lived with single parents in Shelby County lived within the City of Memphis. Only one out of 10 very young children in Shelby County lived outside the City of Memphis.<sup>24</sup>

### Number and Percentage of Children Under 6 Years by Family Type, Memphis & Suburban Shelby County, 2006



Source: American Community Survey, 2006

Of children in Shelby County in 2006 one third were younger than 6, one third between 6 and 11, and one third between 12 and 17.<sup>25</sup>

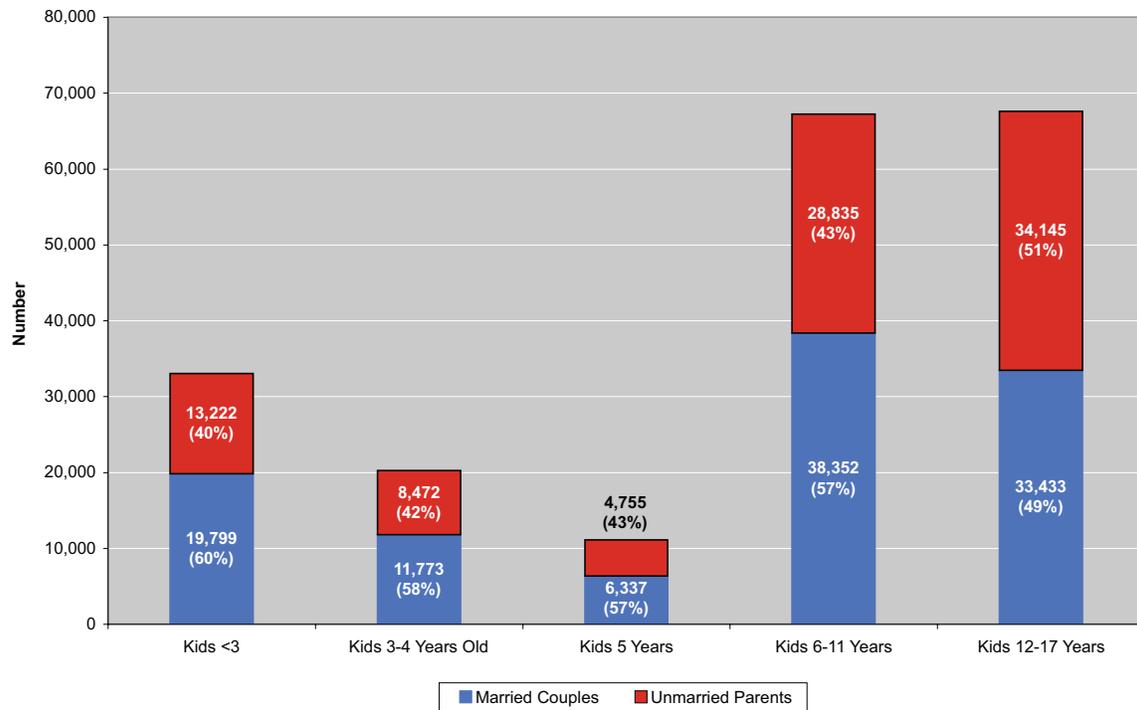
Across Shelby County all children were more likely to live with married parents (55%) than with a single parent (45%).<sup>26</sup>

We know that what happens in early childhood sets the stage for a child's lifetime.<sup>27</sup> Living arrangements affect the cognitive, social, emotional, physical and intellectual development of very young children. Single parenthood poses many family challenges, especially financial.<sup>28</sup> As children grow and

develop, they need the continued support and presence of two or more caring, stable adults in their lives.<sup>29</sup> Many children in our community become parents themselves as teenagers. There is ample evidence of the connection between early and single parenthood and poverty.<sup>30</sup>

Forty percent of pre-teenage children in Shelby County lived with a single parent. Fifty percent of teenagers lived with single parents.<sup>31</sup>

**Number and Percentage of Children by Living Arrangement and Age, Shelby County, 2006**



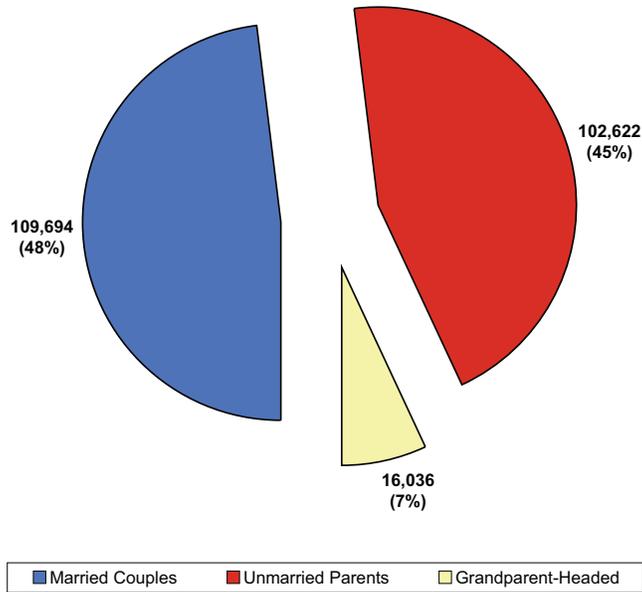
Source: American Community Survey, 2006

## One of three grandparent-headed families in Shelby County lived in poverty.

Early and single parenthood, divorce, unemployment and economic need all raise the potential that children will live with grandparents.<sup>32</sup>

Nationwide there are geographic, racial and ethnic trends in multi-generational families. Families with live-in grandparents are more prevalent in the south, in black families, in central cities and in families facing poverty. Shelby County had the largest number of grandparent-headed families across Tennessee.<sup>34</sup>

### Number and Percentage of Families with Children by Family Type, Shelby County, 2006



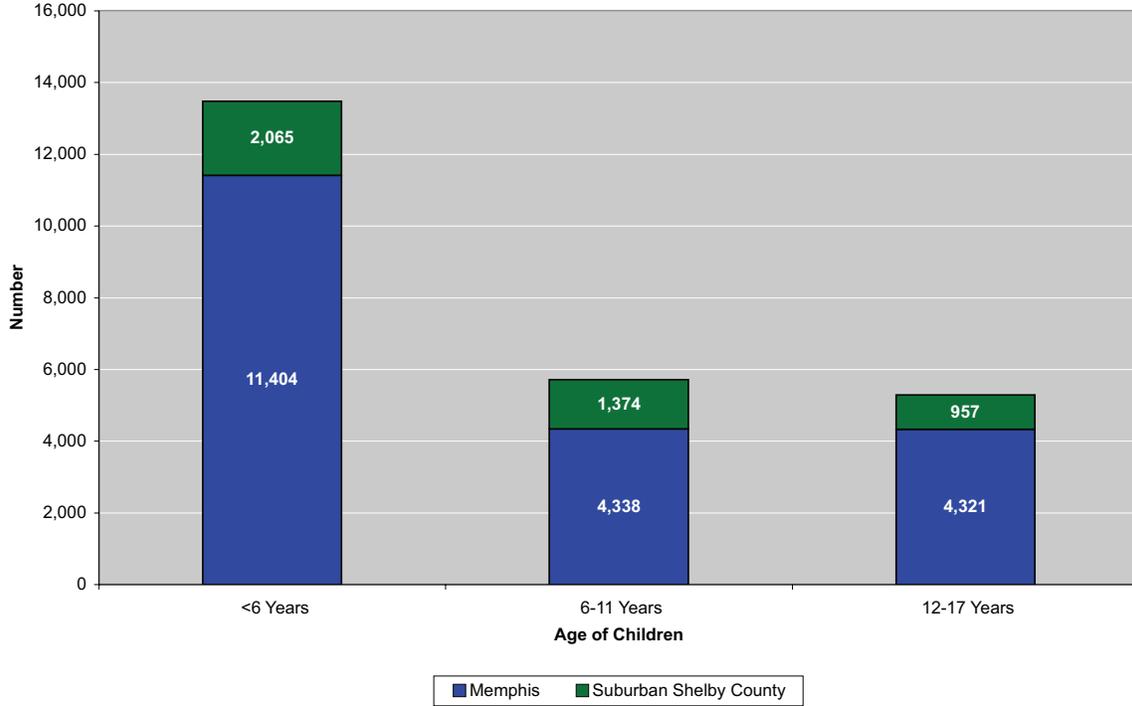
Source: American Community Survey, 2006

In the City of Memphis and in suburban Shelby County more than half of children living with grandparents as their primary caregivers (and no parents present in the household) were younger than 6. This is consistent with U.S. numbers.<sup>35</sup>

Four out of five children in the care of grandparents in Shelby County lived in the City of Memphis.<sup>36</sup>

“Grandparenting” presents special challenges. More than half (58%) of grandparents with primary responsibility for their grandchildren were 60 or older, and two out of three (63%) were still working. One third of grandparent-headed families with no parents present lived in poverty.<sup>37</sup>

### Number of Children Who Live with Grandparents by Age, Memphis & Shelby County, 2006



Source: American Community Survey, 2006

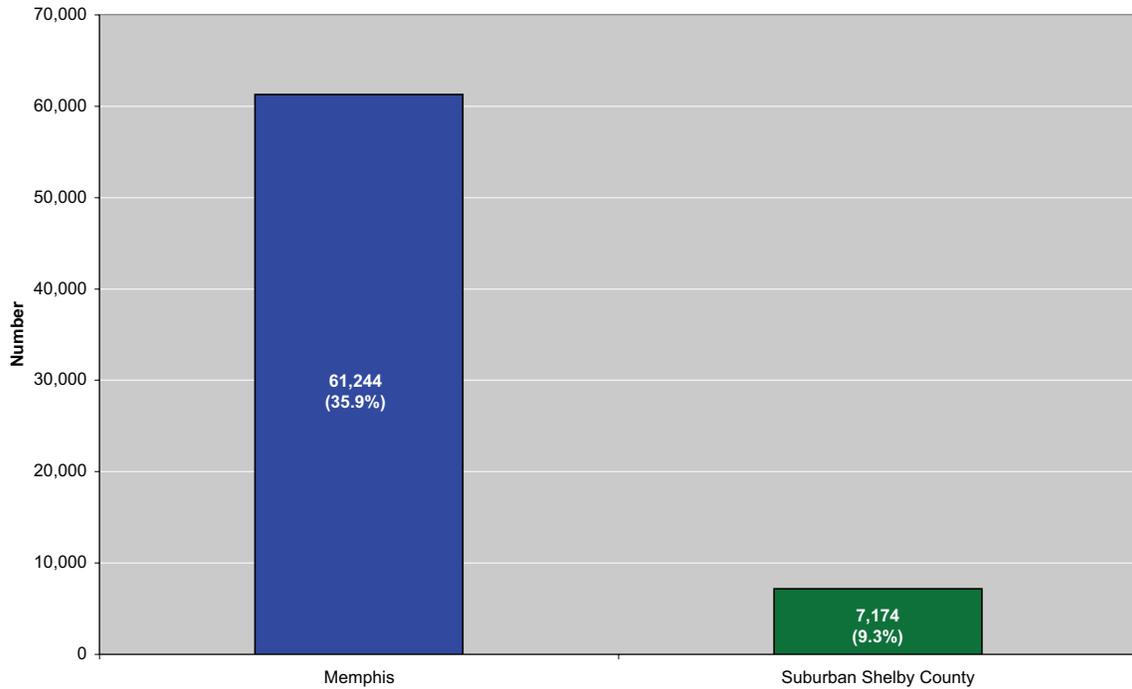
### Across Shelby County one in four children lived in poverty in 2006.

In the City of Memphis one out of three (61,244) children lived in poverty. Outside of Memphis in Shelby County 7,174 children lived in poverty.<sup>38</sup>

Federal Poverty Level (FPL) for a family of four is \$20,650 per year.<sup>39</sup> Yet, Federal poverty

guidelines do not tell the entire story of children living in economically vulnerable families. To better understand just how bleak the economic situation is for low-income families we examined a hypothetical classroom of 30 students in Memphis or Shelby County.

### Number and Percent of Children in Poverty, Memphis & Suburban Shelby County, 2006



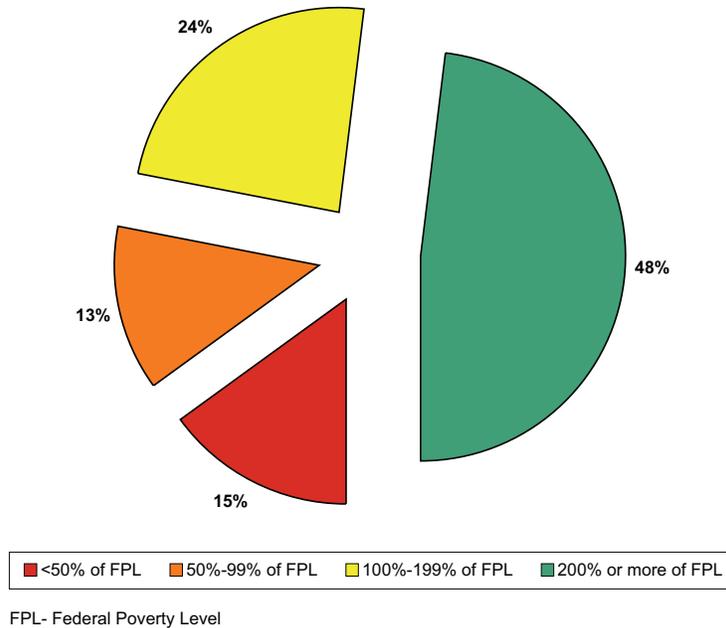
Source: American Community Survey, 2006

Of 30 students:

- Five lived in “dire poverty,” defined as half the Federal poverty level, or an annual income of \$10,325 or less.
- Four lived below poverty.
- Seven lived in low-income families, meaning they are still eligible for free or reduced-price lunches at school.
- Only 14, fewer than half, were above low-income.<sup>40</sup>

Yet, most classrooms in MCS do not resemble this hypothetical model. Children are not divided proportionately by poverty status. The greatest number of children who live in poverty are clustered densely in schools where poverty is the norm; they are not distributed evenly throughout the community. Many more children who live in poverty are likely to attend schools with large majorities of low-income students.<sup>41</sup>

### Percentage of Children by Living Standard, Shelby County, 2006



Source: American Community Survey, 2006

### Children in two-parent families are much less likely to live in poverty.

Nine out of 10 children in poverty in Shelby County lived in single parent homes. Fewer than one in 10 children in poverty in Shelby County lived in families with married parents.<sup>42</sup>

- Half of children in Shelby County lived in middle-income families (200% or greater of the FPL).
- One quarter of children lived in low-income families (between 100-200% FPL).
- One quarter of children lived below poverty (under 100% FPL).

In 2006 more than half (55.7%) of children were born to single parents.<sup>43</sup>

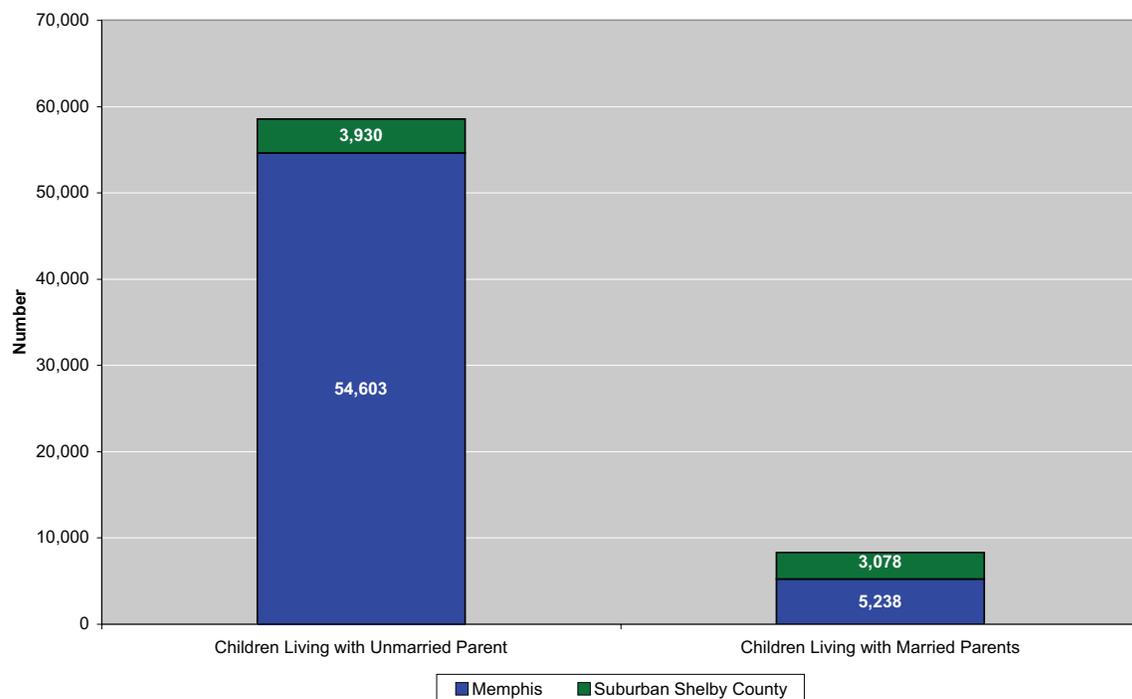
## The 'Class of 2024' shows what the future could hold for children.

If current trends continue in our community, children born in 2006, potentially the high school graduates of 2024, will face the following realities. (*Class of 2024, Wright & Imig 2008*)

- One out of two will grow up in a neighborhood of concentrated poverty where unemployment, crime and illiteracy rates are high.
- One out of three will never feel comfortable reading.
- One out of four will drop out of school.
- One out of five will have a parent in prison.
- One out of 10 will apply for TANF or food stamps before his or her 18th birthday.
- One out of 10 girls will have an unplanned pregnancy.
- One out of 20 girls will have a baby before finishing high school.
- One out of 20 will be arrested before his or her 18th birthday.

To change these results for the Class of 2024 and subsequent generations it will be necessary to invest in targeted interventions from conception to age three.<sup>44</sup>

**Number of Children in Poverty by Living Arrangement, Memphis & Suburban Shelby County, 2006**



Source: American Community Survey, 2006

## Total family income is a reliable measure of child well-being.

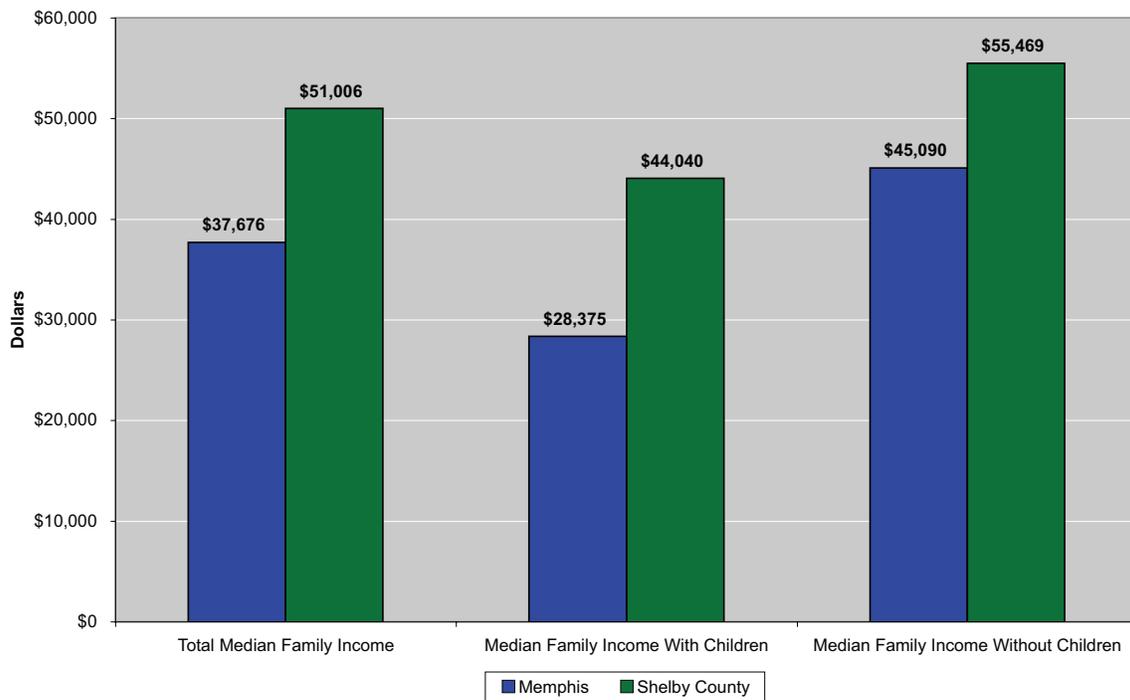
Families that are above low-income have more resources available for child care, transportation and health care — all things that can provide a stable environment for children. Kids raised in low-income and poor families are exposed to a smaller vocabulary at home, are less likely to spend time reading with their parents and caregivers and are more likely to struggle in school.

Fortunately, we know that early interventions with pregnant mothers and very young children through home visitation programs and high-quality child care can make a tremendous difference. Low-income parents, especially those who are young and need

more education themselves, need reliable and enriching experiences for their children while the parents are at school or in job training. One of the key factors that lift families out of poverty is access to high-quality child care.<sup>45</sup>

- Median income for families with children in the City of Memphis was \$28,375 a year. Thus the majority of young children in our community live just slightly above the FPL.
- Median income for families with children in Shelby County was \$44,040 per year, just slightly higher than the Federal low-income threshold.

**Median Family Income by Presence of Children, Memphis & Shelby County, 2006**



Source: American Community Survey, 2006

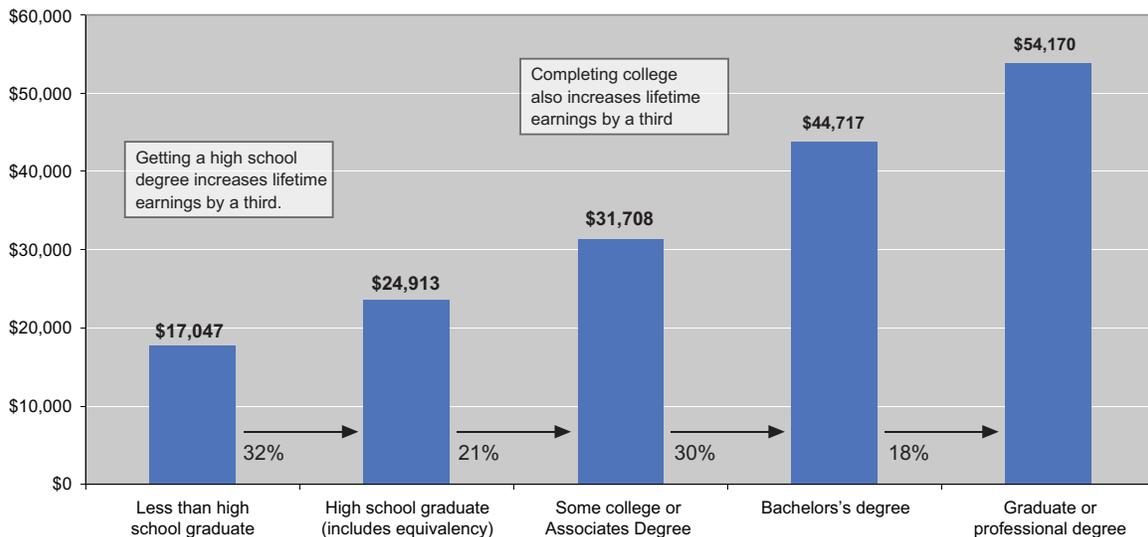
## The difference between poverty and success is spelled e-d-u-c-a-t-i-o-n.

Shelby County residents without a high school education earn poverty wages. Workers with high school diplomas may earn above the poverty level. Some degree of college education increases average annual income by 21 percent.

A college degree doubles average annual income.<sup>46</sup>

A mother's educational attainment is a good predictor of a child's overall life outcomes and successes.<sup>47</sup>

Income by Educational Attainment, Shelby County, 2005



	Less than HS graduate	HS (including GED)	Some college or Associates Degree	Bachelor's Degree	Graduate or Professional Degree
<b>Annual Earnings (2005)</b>	\$17,047	\$24,912	\$31,708	\$44,717	\$54,170
<b>Lifetime Earnings (45 years)</b>	\$767,115	\$1,121,085	\$1,426,860	\$2,012,265	\$2,437,650

Increasing educational attainment from less than HS to some college or an Associate's Degree nearly doubles (47%) lifetime earnings in Memphis and Shelby County.

Nearly the same thing happens for increasing the highest level of education from high school diploma to Bachelor's Degree (44%).

The more education a person completes, the higher annual and lifetime wages she can expect to earn. Higher levels of education—especially among mothers—also correlate strongly with positive outcomes.

## Only one in 10 Shelby County families has a financial safety net.

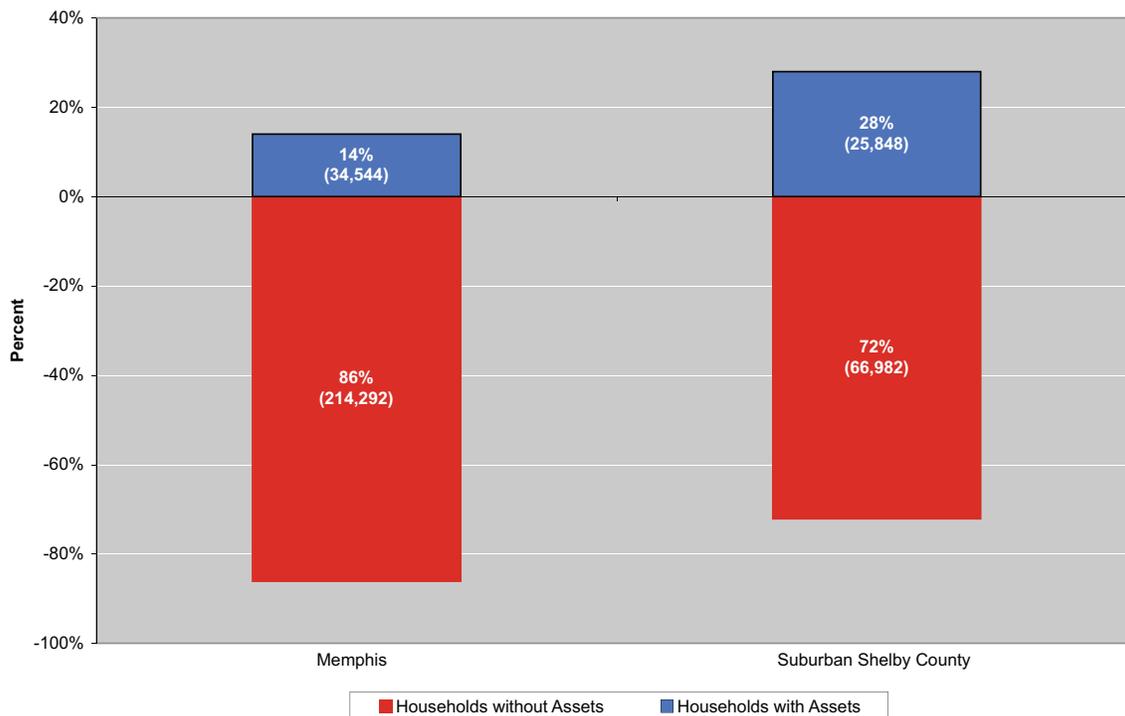
Household assets provide financial safety nets for families. Most households in Memphis do not have assets such as real estate, savings accounts or securities, bonds or 401k plans for retirement. These assets are financial resources above and beyond take-home pay that families can rely on in case of emergency or to plan for the future.

Almost 90 percent of households in Memphis and Shelby County do not have non-income assets. While half of houses locally are owner-occupier, a large percentage of these homes are owned by families without children. The vast majority of families throughout Shelby County lives paycheck-to-paycheck without any safety net.

Two-thirds of Shelby County households without assets are located within the City of Memphis.<sup>49</sup>

The lack of financial assets also exposes families to other community problems such as the reliance on check-cashing agencies rather than banks. Using a bank to manage family income and finances helps to establish a credit record that makes possible home and durable goods purchases. In the wake of the sub-prime mortgage lending crisis, a strong family credit history is even more critical.

Number and Percentage of Households by Presence of Assets, Memphis & Suburban Shelby County, 2006



Source: American Community Survey, 2006

## Family well-being and children's futures are parallel with housing status.

Housing status is a strong indicator of family stability. A third of all public school children in the City of Memphis change schools more than once a year for reasons other than grade promotion, increasing the likelihood that they will drop out of school and not graduate.

Two-thirds of people in Shelby County and half of the people in the City of Memphis own their homes. Among families living in poverty only one in four owns its home.<sup>50</sup>

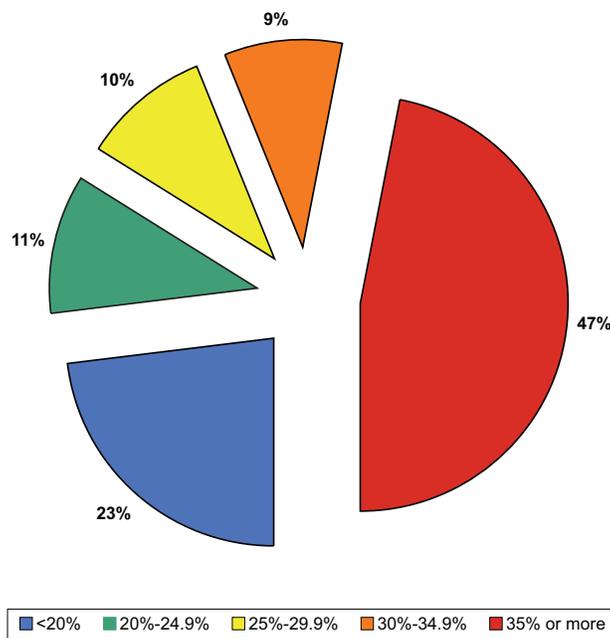
According to Federal poverty guidelines, a family should spend about one third of its income on housing, one third on food and one third on everything else. In spite of the fact that Shelby County is one of the lowest-cost housing markets in America, more than half of the people in Memphis spend 30 percent

or more of their income on housing.<sup>51</sup> Median rent plus utilities in Shelby County is \$699 per month.<sup>52</sup>

Since renters are more likely than owners to change addresses frequently, low-income and poor families move frequently and create negative outcomes for children.<sup>53</sup>

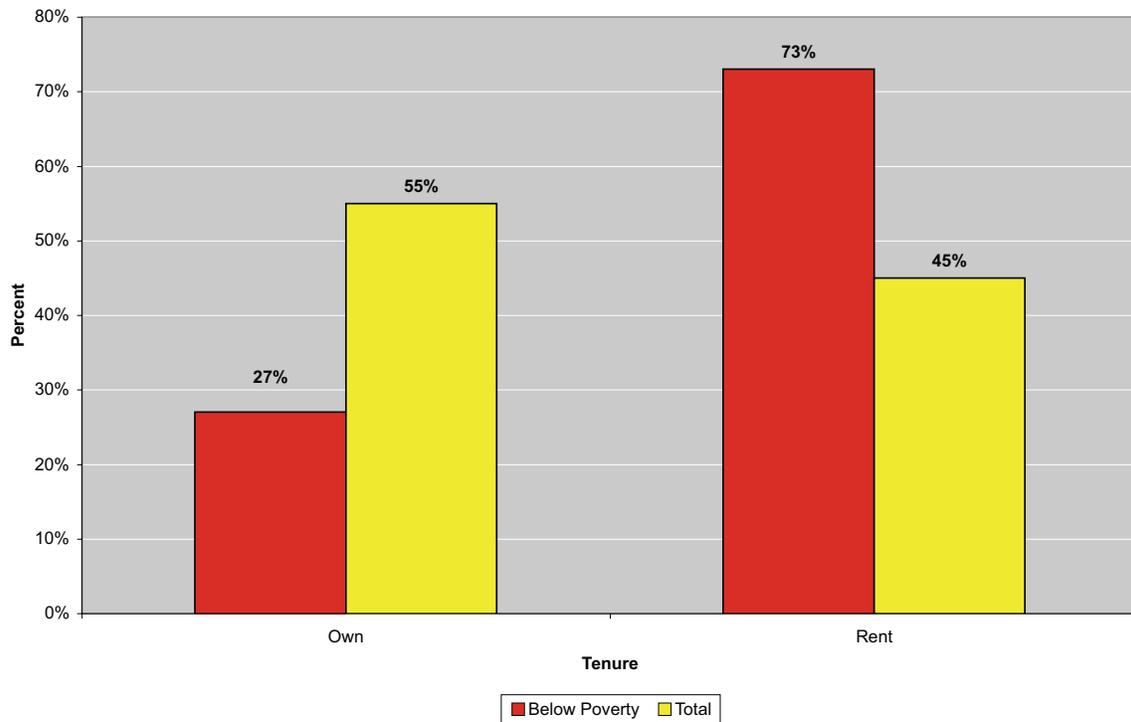
Replacing low-income housing with mixed-income housing in Memphis has contributed to the housing instability of many families. Only about one in five families displaced by redevelopment and urban revitalization returns to its previous neighborhood, and this destroys the community fabric in low-income areas.<sup>54</sup>

Percentage of Household Income Spent on Rent, Shelby County, 2006



Source: American Community Survey, 2006

Percentage of Households in Poverty by Tenure,  
Shelby County, 2006



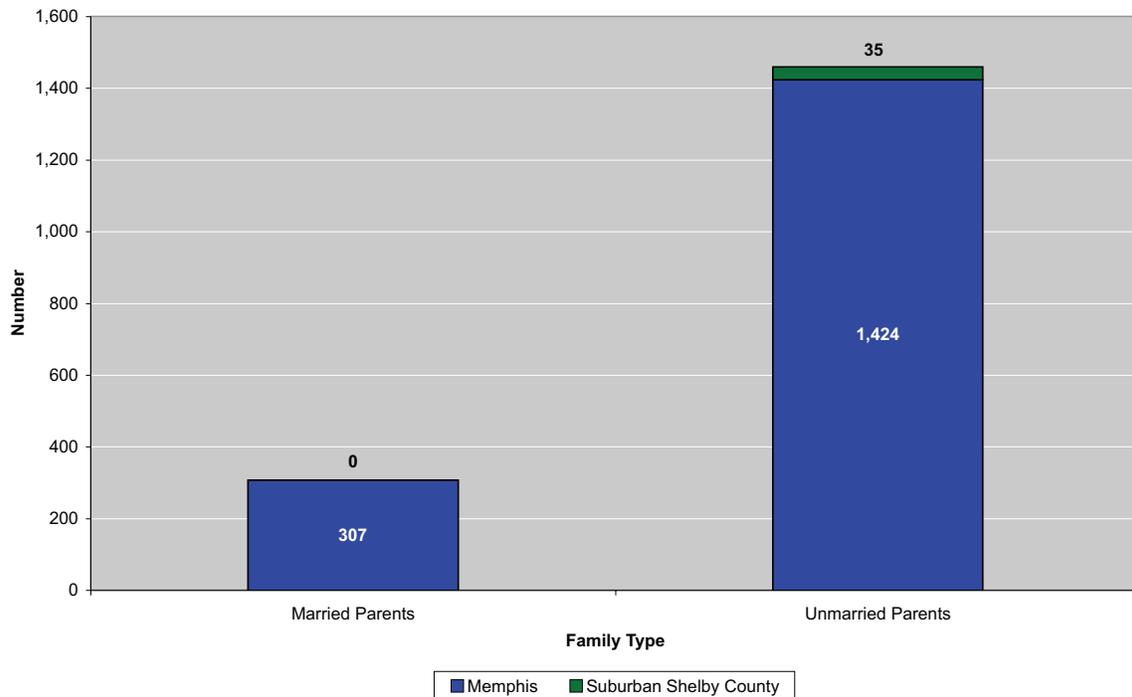
Source: American Community Survey, 2006

## Public assistance is part of the safety net for children and their families in poverty.

Economically vulnerable families in Shelby County rely on government subsidies to make ends meet. Single parents raising children comprise the bulk of public assistance recipients in our community.

The majority of public assistance recipients live within the City of Memphis, reflecting a concentration of poverty in some areas.

**Number of Families in Poverty with Supplemental Security Income and/or Cash Assistance  
by Family Type, Memphis & Suburban Shelby County, 2006**



Source: American Community Survey, 2006

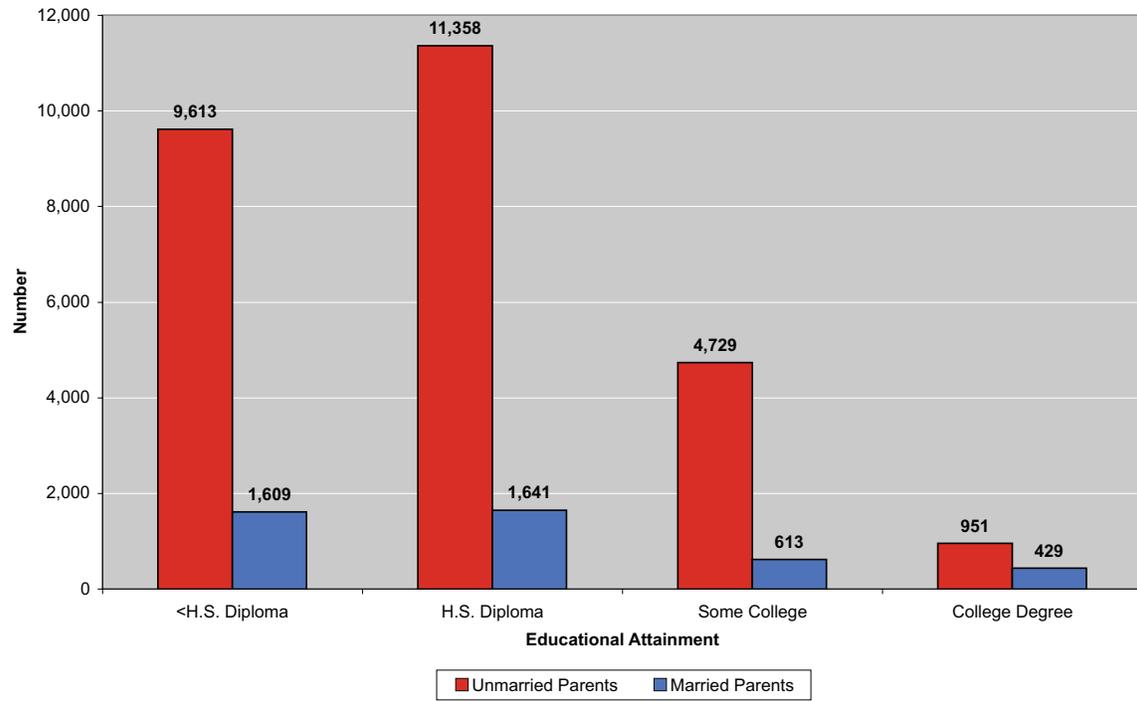
The majority of people confronting poverty in Shelby County are single parents whose education is limited to a high school diploma or less.

More than one-third (37%) of children born in Shelby County in 2006 will be reared by single parents whose education stopped in high school. Half of children born in 2006

will live in poor and low-income families, meaning that when they enter the first grade in 2012, they are likely to be less prepared for school than their more advantaged peers.<sup>55</sup>

Studies suggest that children from affluent families will reach kindergarten with cognitive scores 60 percent above the average scores of children from poor families.<sup>56</sup>

### Number of Families in Poverty by Type and Educational Attainment, Shelby County, 2006



Source: American Community Survey, 2006.

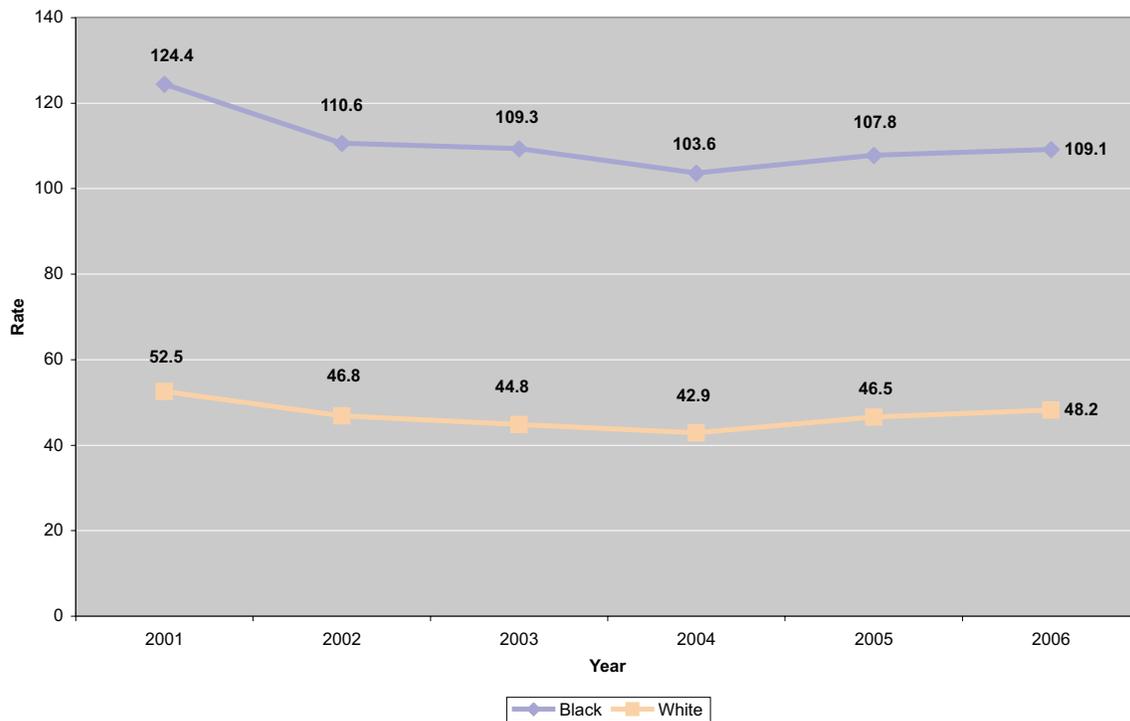
## Teen pregnancy rates are up.

Teen pregnancy rates rose slightly in Shelby County and across the state over the past two years.<sup>57</sup> This is a troubling trend because early and single parenthood correlates strongly with poorer outcomes for children.<sup>58</sup>

Fifteen percent of children in Shelby County were born to teen mothers. Three out of four (75.8%) teens giving birth last year were first-time mothers.<sup>59</sup> Half of all teen mothers will apply for TANF (Temporary Assistance for Needy Families) in the next five years.<sup>60</sup>

One of the key factors in lifting families out of poverty is access to quality child care (Newman & Chen 2007). Programs such as Early Head Start, Head Start and Nurse Family Partnerships that target pregnant mothers and very young children have demonstrated positive results in improving parenting skills, helping parents with job training programs and finishing high school.<sup>61</sup>

Rate of Teen Births per 1,000,  
Shelby County, 2001-2006



Source: TN Department of Health, Vital Statistics 2001-2006.

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# Children's Educational Well-Being



## What happens to a child before the first grade will likely determine success thereafter.

Parents are a child's first teachers, and the quality of early childhood experiences closely follows the economic and educational status of a child's parents. Children of well-educated and economically secure parents perform at predictably higher levels. Memphis parents fall well below all statistical averages in both education and economic welfare.

This section focuses on the state of pre-school learning in Memphis and Shelby County and provides a current score card of local achievement and challenges.

### Public education in Memphis is on a steep and slippery slope.

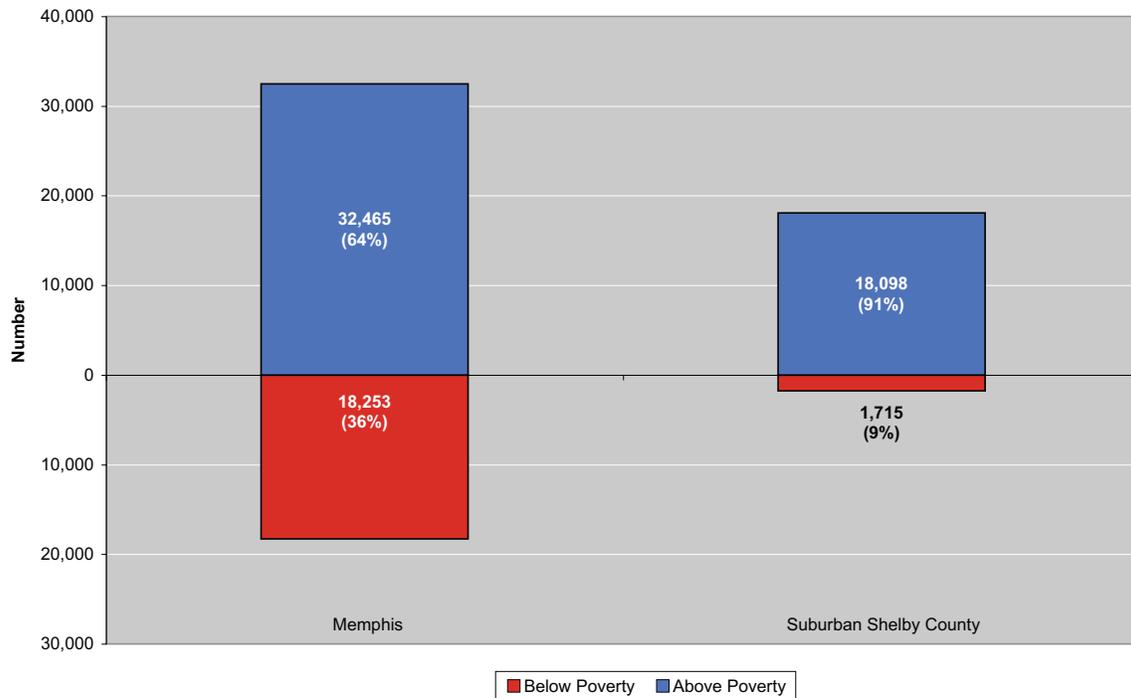
Public school educators in Memphis face one of the most difficult challenges in the community due to the backgrounds of a majority of the children they must teach. These children are more likely to:

What occurs in the very first years of a child's life contributes to that child's ultimate achievement in school and in life.

Today many children arrive at school with a significant head-start on learning. That makes it much more difficult for children from impoverished backgrounds to catch up. They are behind on the first day of school and fall farther behind each day. Educational achievement in most cases will determine success in life.

- Live in poverty with only one parent or grandparent
- Rely on free and reduced price lunches at school
- Have little or no pre-school educational experience
- Have limited cognitive stimulation
- Are exposed to increased levels of violence in their homes, neighborhoods and schools
- Change residences and schools regularly

**Number and Percentage of Children under 5 years  
by Poverty Status, Memphis & Suburban Shelby County, 2006**



Source: American Community Survey, 2006.

## Eight out of 10 Memphis school children are economically disadvantaged.

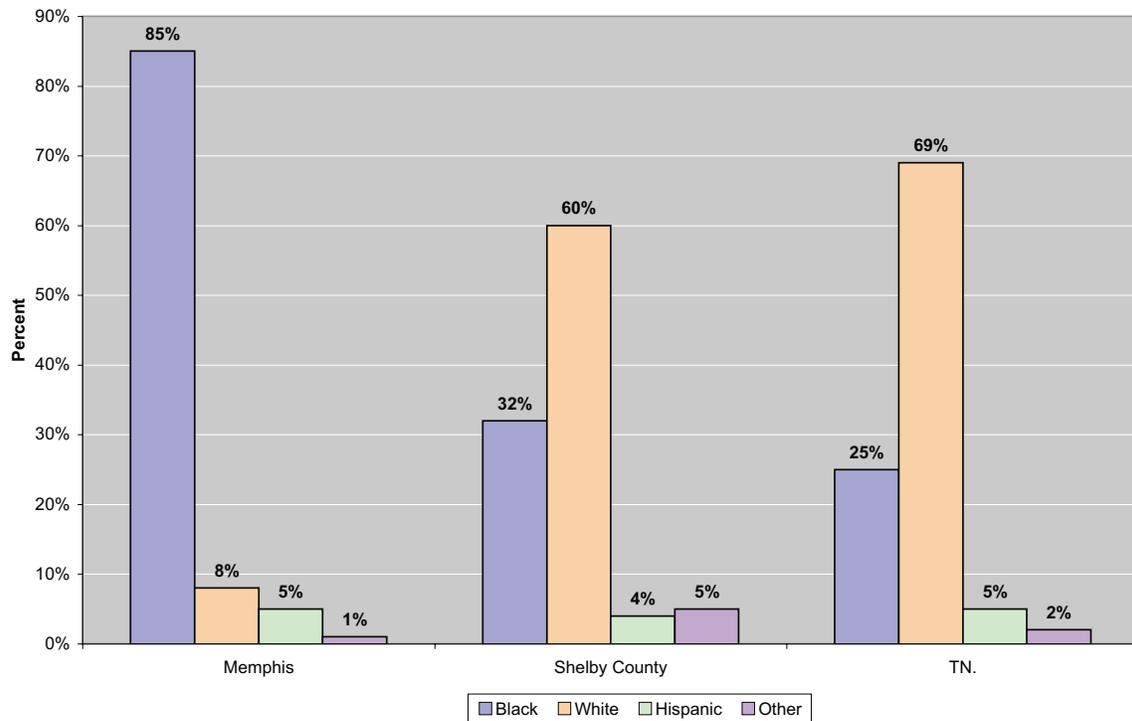
- In 2006 there were 70,531 children under age five in Shelby County.<sup>1</sup>
- Nearly three out of four (72%) lived in the City of Memphis.<sup>2</sup>
- Three out of four poor children in Shelby County also lived in Memphis.<sup>3</sup>
- Eight out of 10 children in Memphis City Schools (MCS) lived in economically disadvantaged families.
- Only one out of four students in Shelby County Schools (SCS) lived in an economically disadvantaged family.<sup>4</sup>

Children living in families in poverty (below \$20,000 per year for a family of four) and low-income (\$20,000-\$40,000 per year) face more difficulties in school.<sup>5</sup>

Economically Disadvantaged (ED) students are defined as those living below 185 percent of the Federal Poverty Level (FPL). In 2006, this percent was equivalent to \$37,000 per year for a family of four. These students are eligible for free and reduced-price lunches at school.<sup>6</sup>

Problems facing families with incomes between 100 percent and 200 percent of the Federal Poverty Level are highlighted in a recent book entitled *The Missing Class*. Children living in these families face many of the same obstacles as children living at or below poverty. Yet their parents' higher incomes often disqualify them for services and programs that could help lift them above their low-income status.<sup>7</sup>

### Percentage of Student Enrollment by Race, MCS, SCS & Tennessee, 2007

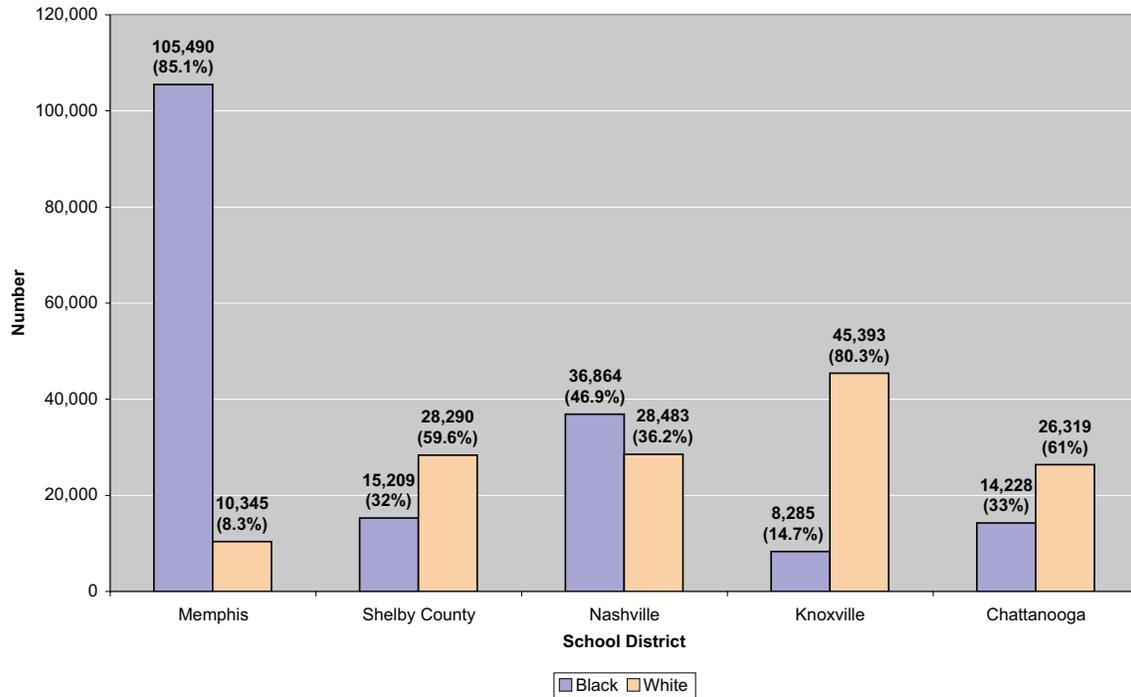


Source: TN Department of Education, 2007

### Almost half of Tennessee's black students attend school in Shelby County.

- Nearly half (48.6%) of all black students in Tennessee attended school in Shelby County.<sup>9</sup>
- MCS is the largest school district in Tennessee and has the largest number of minority students in Tennessee.
- In 2007, 85 percent of students in Memphis City Schools were black.
- In Memphis City Schools in 2007 the number of white students continued to decrease and the number of Hispanic students increased.<sup>10</sup>

### Number and Percentage of Public School Enrollment by Race, Memphis, Shelby County, Nashville, Knoxville & Chattanooga, 2007



Source: TN Department of Education, 2007

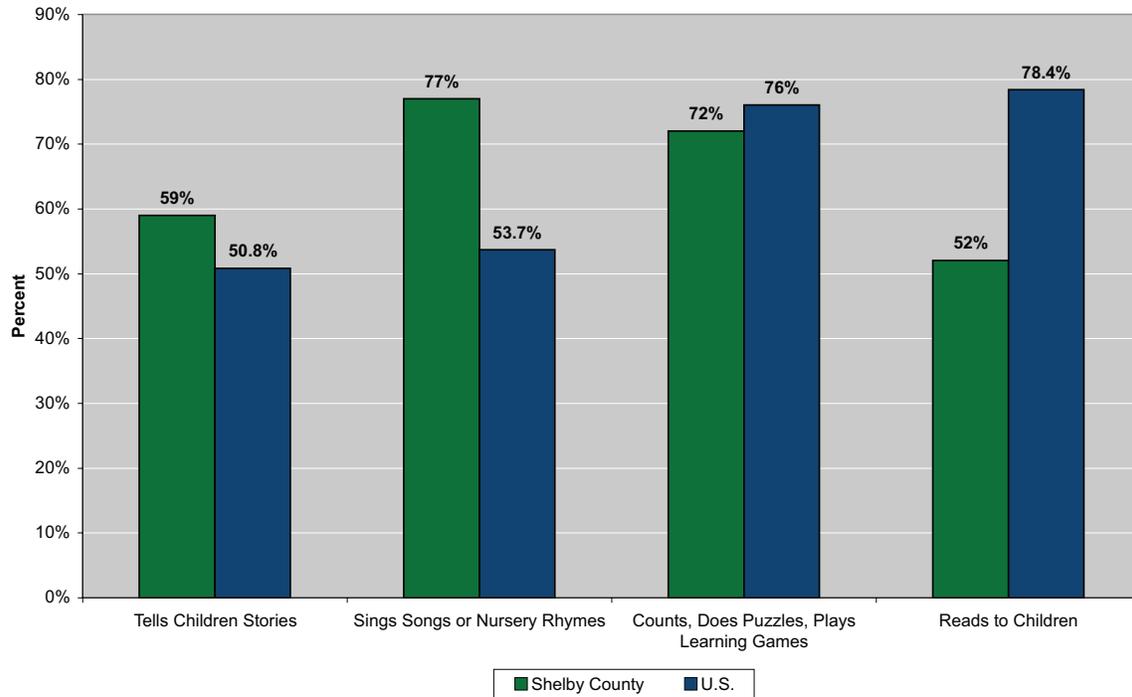
### Home is every child's first schoolhouse.

Home has been called America's first schoolhouse because families contribute much to the developmental capacity of children well before they reach school.<sup>11</sup>

Yet, one in three adults in Shelby County has difficulty reading.<sup>12</sup> Parents who have difficulty reading are less likely to read to their children.

Some Shelby County parents who live in poverty provide pre-literacy experiences for their children instinctively. They were as likely, or more so than parents in poverty nationwide, to sing songs or nursery rhymes, count or do puzzles and tell their children stories. However, poor parents in Shelby County lagged far behind poor parents nationwide in reading to their children, the most important pre-literacy experience.<sup>13</sup>

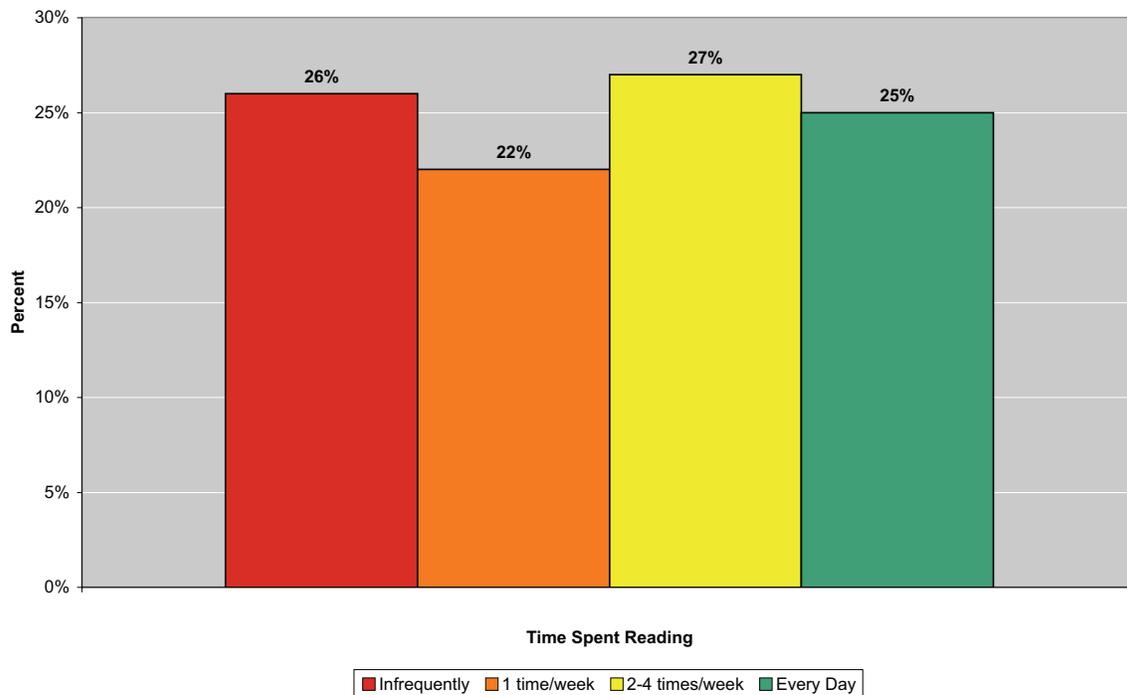
### Percentage of Pre-Literacy Experiences Offered by Parents in Poverty, Shelby County & Nationwide, 2007 & 2005



Source: Memphis Literacy Council, 2007 and National Center for Education Statistics, 2005.

- Nationwide, three out of four parents living in poverty read to their children several times a week.
- Only half of parents in poverty in Shelby County read to their children several times a week.<sup>14</sup>
- Only one out of three children will enjoy pre-literacy experiences (reading, playing peek-a-boo, story-telling) with a family member.

### Percentage of Parents in Poverty by Time Spent Reading to Their Children, Shelby County, 2007



Source: Memphis Literacy Council, 2007

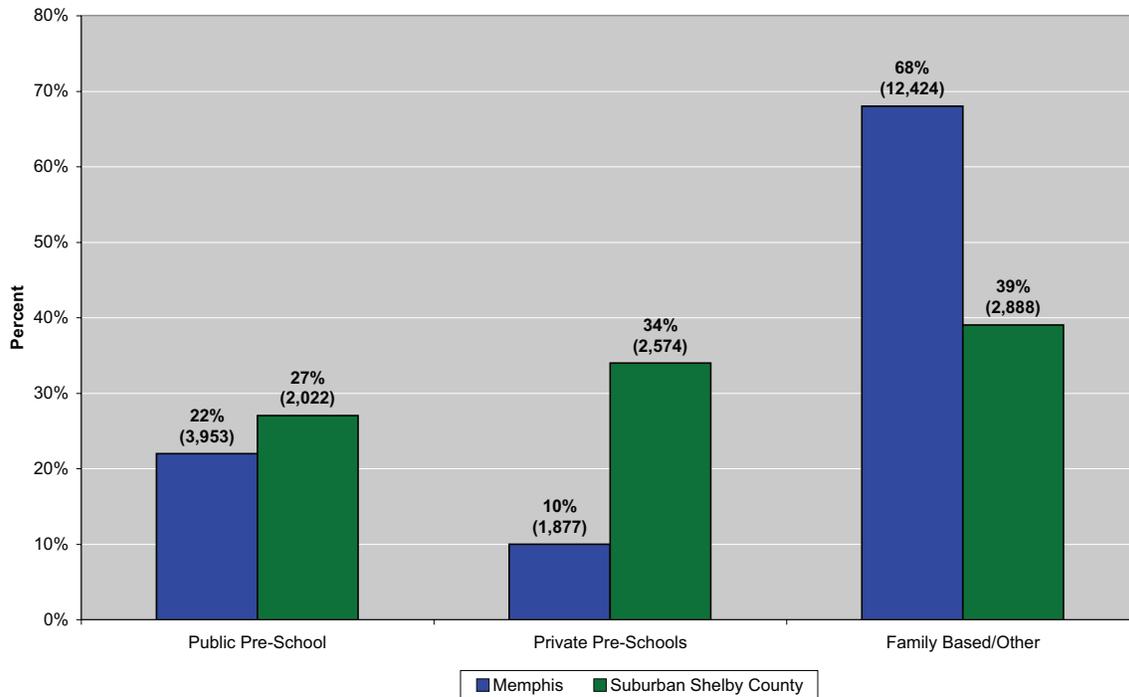
### Tennessee is a leader in state-supported pre-kindergarten education.

Nationally recognized programs such as the Perry Preschool, Chicago Child-Parent Centers, the Carolina Abecedarian program and Head Start have demonstrated that children who receive high-quality, early education fare better in school and in life.<sup>15</sup>

The National Institute for Early Education Research recognized Tennessee as one of six states in the nation with the highest quality pre-kindergarten standards.<sup>16</sup> A recent report from the Editorial Projects in Education Resource Center gave Tennessee high marks for its efforts to promote state-supported, high-quality, early education throughout the state.<sup>17</sup> Pre-school education is a mixed bag.

Economically better-off children attend private kindergartens and pre-kindergarten programs. Some children attend state-supported facilities. Others receive pre-school training at home, while many others receive none.

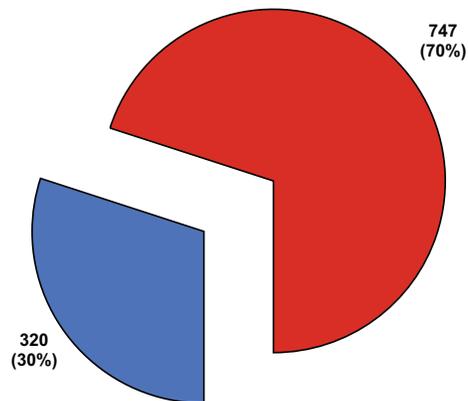
### Percentage of Three and Four-Year-Old Children by Care Arrangement, Memphis City & Suburban Shelby County, 2006



Source: American Community Survey, 2006.

- Nationwide almost half (46.1%) of three and four-year-olds are in non-parental child care, including pre-K programs.<sup>18</sup>
- In Tennessee more than one third (36%) are enrolled in pre-K programs.
- In Shelby County about 45 percent spend part of each day in non-parental care (ACS 2006).
- One out of five is in a private pre-school program.
- One out of four is in a public pre-school program. (ACS 2006).

**Number of Child Care Centers  
by Star Rating, Shelby County, 2008**



■ Child Care Centers with a 3-Star Rating    ■ Child Care Centers with a 0-, 1-, or 2-Star Rating or Unrated

Source: TN Department of Human Services, 2008.

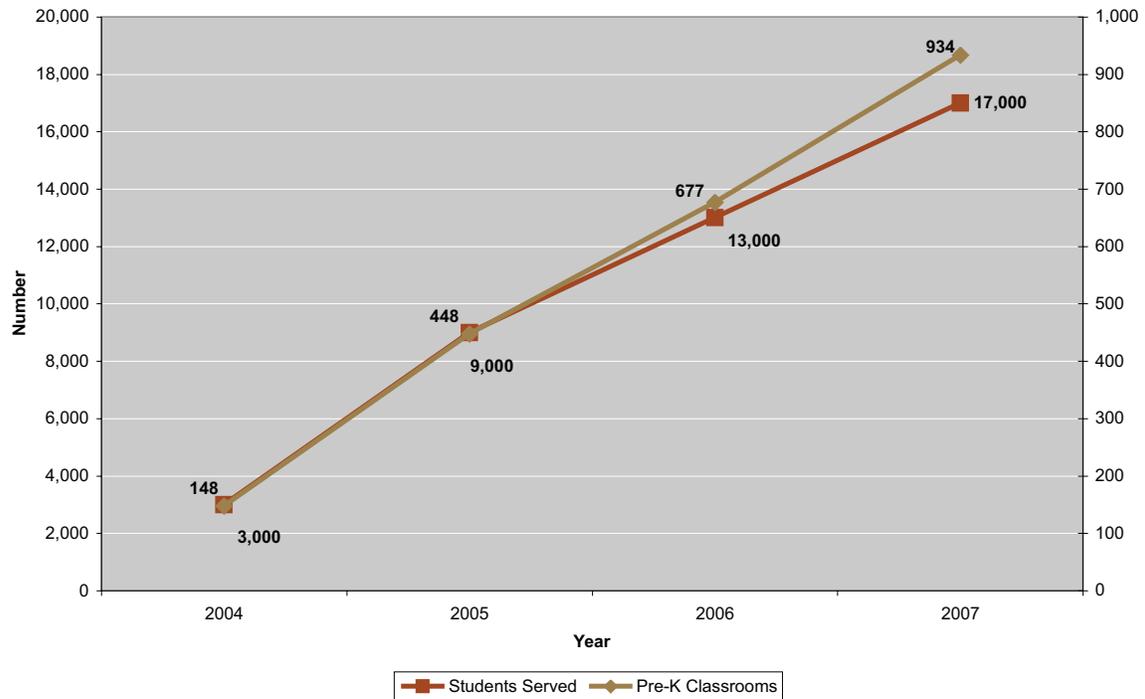
### **30 percent of Shelby County child care centers are three-star rated.**

There are many metrics for evaluating the quality of child care centers, such as staff-to-child ratio, staff education and training level, open parent-staff communication, etc. The quality of child care trends with its cost. Higher quality centers are often more expensive and unaffordable for low-income and poor parents. Informal child care arrangements are often used because they are more convenient for working parents whose jobs necessitate child care during evening and weekend hours when many centers are closed.

The Tennessee star system measures the quality of child care facilities.

- Three stars identify the highest rank and validate that a center meets or exceeds Tennessee’s standards for child-adult ratios, curriculum, safety and teacher qualifications.<sup>19</sup>
- The National Association for the Education of Young Children (NAEYC) also has established rigorous standards for child care centers and employees nationwide.<sup>20</sup> There are 23 NAEYC-accredited centers in Shelby County.

### Number of Pre-Kindergarten Classrooms and Students Served by Pre-Kindergarten Programs, Tennessee, 2004-2007



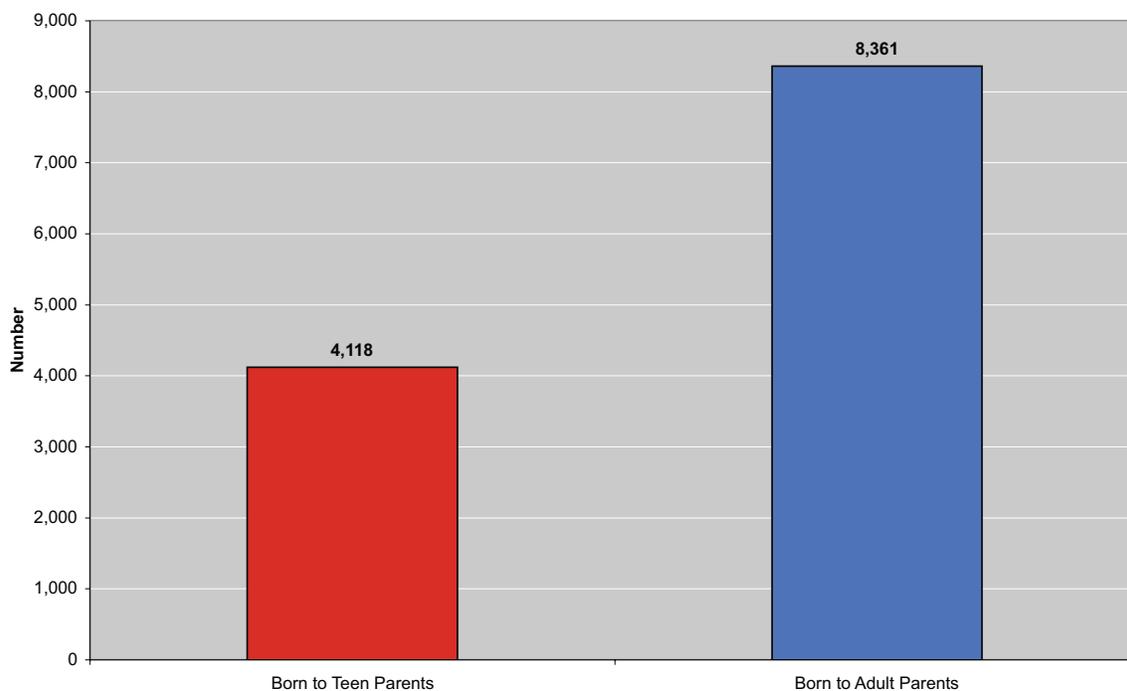
Source: TN Department of Education, 2004-2007.

### Pre-Kindergarten programs are one of the best economic investments a society can make.

Tennessee invests \$4,700 per child participant per year in early childhood programs. Tennessee added 257 new pre-kindergarten classes in 2007 making a total of 934 classes serving 17,000 children.<sup>21</sup> The Tennessee General Assembly has funded the pre-kindergarten

initiative (both the Pilot and Voluntary programs) at a total of \$80 million for 2007-2008 school year. Each classroom receives approximately \$85,700 in funds from the State of Tennessee. A fully-funded pre-kindergarten classroom costs approximately \$100,000.<sup>22</sup>

### Total Number of Children Eligible for Early Head Start by Age of Parents, Shelby County, 2006



Source: American Community Survey, 2006.

### Early Head Start benefits parents and children.

Almost one out of three children in Shelby County was eligible in 2006 for Early Head Start or Head Start. One in three children eligible for Early Head Start was born to a teenage mother. These children are more likely to live in poverty, to hear fewer words and are less likely to spend time reading with their parents and caregivers. These factors make children of teenage mothers less prepared when they reach school.

Early Head Start is the first critical step for these children because it makes it easier for teenage mothers to finish high school, pursue further education and gain job training while providing their children with high-quality child care.

(Love, Kisker, Ross et al, 2005)

Compared to other parents whose children do not participate, parents whose children are enrolled in Early Head Start:

- Are more likely to participate in job training programs and to be employed
- Are less likely to have another child within two years
- Are more likely to read to their children
- Less likely to spank their children

## High-quality, early childhood education is critical to the future of Shelby County.

Nothing is more important to the future of Shelby County than decreasing the number of citizens who live in poverty. We must break the cycle of poverty.

The key to doing so is providing quality child care options that allow parents to go to school or work while children are being prepared to be successful in school by qualified caregivers.

Investing in high-quality universal pre-kindergarten programs for all children is a wise economic decision. (*Committee for Economic Development, 2006*)

## The Shelby County 'Class of 2024'

The "Class of 2024" is a snapshot of children who should graduate from high school in 2024.

- Three out of four live in Memphis.
- One out of four is white.
- Two out of three are black.

- One out of 10 is Asian, Hispanic or other non-white.
- In Memphis, three out of four will face poverty.

## Parents of the 'Class of 2024'

- Half are single mothers.
- One out of seven is a teenage mother.
- Three out of four teenage mothers were giving birth for the first time.
- One out of seven primary caregivers is another relative, most likely a grandparent.

- One out of three children born in 2006 will be raised by a single parent whose education stopped in high school.
- Almost half the "Class of 2024" will live in fragile families that are low-income or below the poverty threshold.

## What the future holds for the 'Class of 2024' if current trends continue

- One out of four will drop out of school.
- One in seven will apply for public assistance before his or her 21st birthday.
- One out of 10 will be arrested before age 21.
- One out of 10 girls will have an unintended pregnancy.
- One out of 20 girls will have a baby before she finishes high school.
- Half will grow up in neighborhoods of concentrated poverty where unemployment, crime and illiteracy rates are high, and where members of the community are isolated from work and school.
- One out of five will have a parent in prison.
- One out of 20 will be a victim of child abuse.

## If we apply the Seattle Social Development program results to the 'Class of 2024'

- 10 percent would delay sexual activity until age 18.
- 10 percent would have fewer sexual partners by age 18.
- Three percent fewer children would have unplanned pregnancies.
- Six percent fewer children would be suspended from school.
- 10 percent fewer children would fail a grade.
- 25 percent fewer children would become a regular smoker or drinker.

## Public schools must be prepared to build on early childhood efforts.

For many years our public schools have had to deal with children who were not prepared for school. Now more children each year are receiving some formal pre-kindergarten opportunities. Quality early childhood experiences alone, though, cannot ensure a child's successful future. High quality public education must build on the foundation children receive in their early years to assure subsequent gains through high school graduation and beyond.

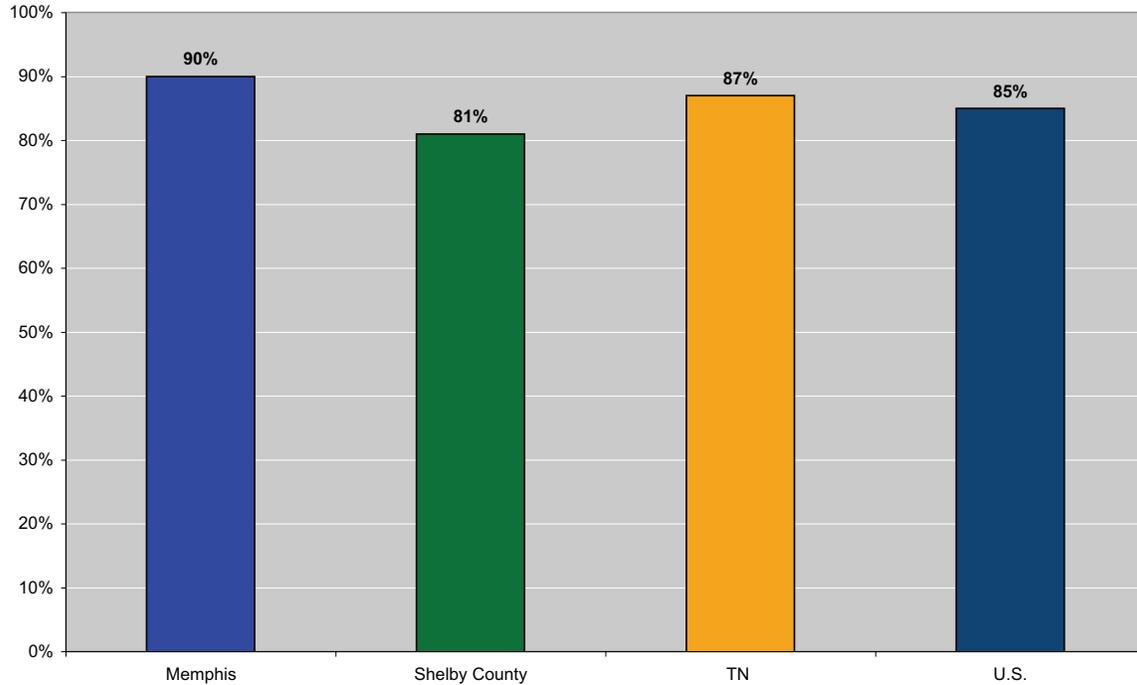
To expect children to defer parenting until after they finish high school and are out of their teenage years, we must assure that school stimulates them and offers attainable improvement in their lives.

Private high school tuition in Shelby County ranges from \$9,000 to \$15,000 a year. As a result, children who attend private schools are most likely to do so during pre-school and elementary school years.<sup>24</sup>

In the City of Memphis in 2006:

- 97 percent of black students attended public schools.<sup>25</sup>
- 49 percent of white students attended public schools. (ACS 2006)

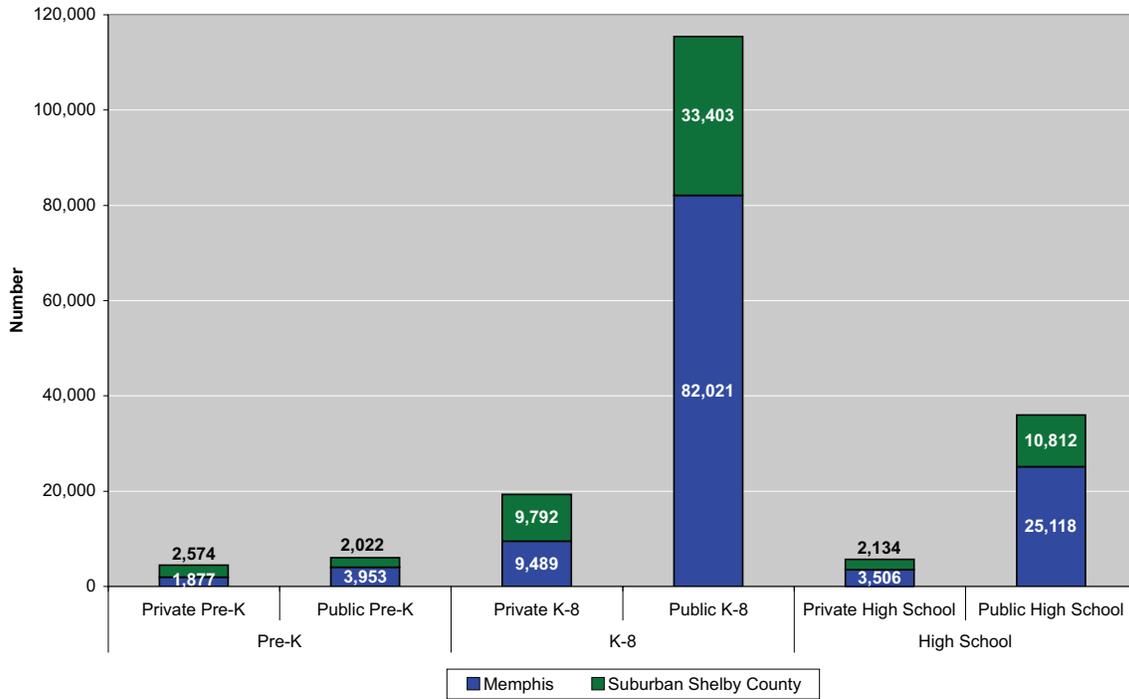
### Percentage of Children in Public Schools, Memphis City, Shelby County, Tennessee, & U.S., 2006



Source: American Community Survey, 2006.

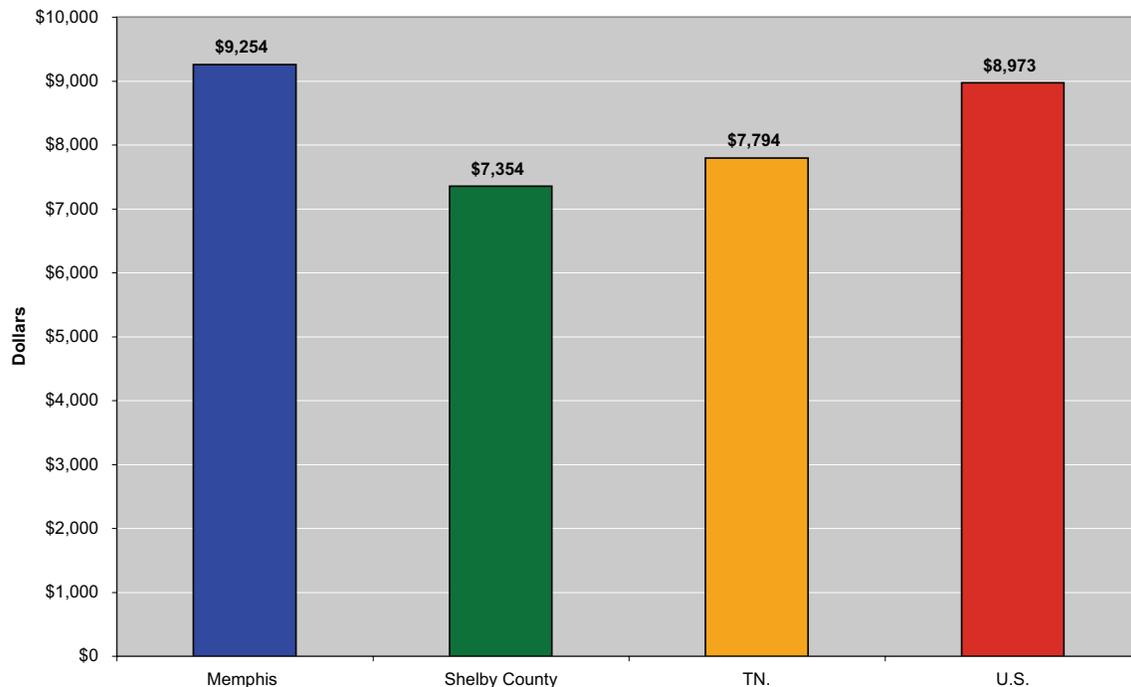
- Both nationally and statewide, 85 percent of children attended public schools.
- One out of five children in Tennessee lived in Shelby County.
- The Memphis City School District was the 21st largest in the nation.
- In the City of Memphis 90 percent of children attended public school.
- In Shelby County 81 percent of children attended public school.
- MCS serves 110,753 students in 112 elementary, 25 middle and 31 high schools, an average of 659 children per school.
- SCS serves 45,897 students in 49 schools, an average of 936 children per school.<sup>26</sup>
- MCS operates 3.4 times more schools than Shelby County for 2.4 times more students.

### Number of Students Enrolled in Public and Private Schools, Memphis & Suburban Shelby County, 2006



Source: American Community Survey, 2006

### Amount Spent Per Pupil, Memphis City, Shelby County, Tennessee & U.S., 2007 & 2008



Source: EdWeek.org, 2008 and TN Department of Education, 2007.

### Memphis cost-per-pupil is higher than Shelby County, Tennessee and U.S.

- In the U.S. today about 48 million students attend public schools, two million more than in 1970.
- Per-pupil spending has increased steadily in the U.S., corresponding with the increasing percentage of low-income students.
- In a classroom of 30 students in 1969 five children would have been eligible for today's free or reduced-price lunches. In a classroom of 30 students in 2007, 18 children were eligible.
- The Federal Government estimates that it costs 40 percent more to educate a low-income student. The majority of students in 94 percent of Memphis schools are from low-income families.
- MCS spends four percent more per student than the U.S. average, 19 percent more than the Tennessee average and 26 percent more per pupil than SCS.

## **How well Memphis students are performing depends on which test results you read.**

Tennessee Comprehensive Assessment Program (TCAP) is Tennessee's program for 1) measuring student achievement and 2) maintaining compliance with regulations set by the Federal No Child Left Behind Act. TCAP tests are given in the spring to all public school students from second through eighth grade. To comply with Federal law, test results are reported by race/ethnicity, students with disabilities, economic disadvantage or limited English proficiency. Public high school students take the Gateway Exam.

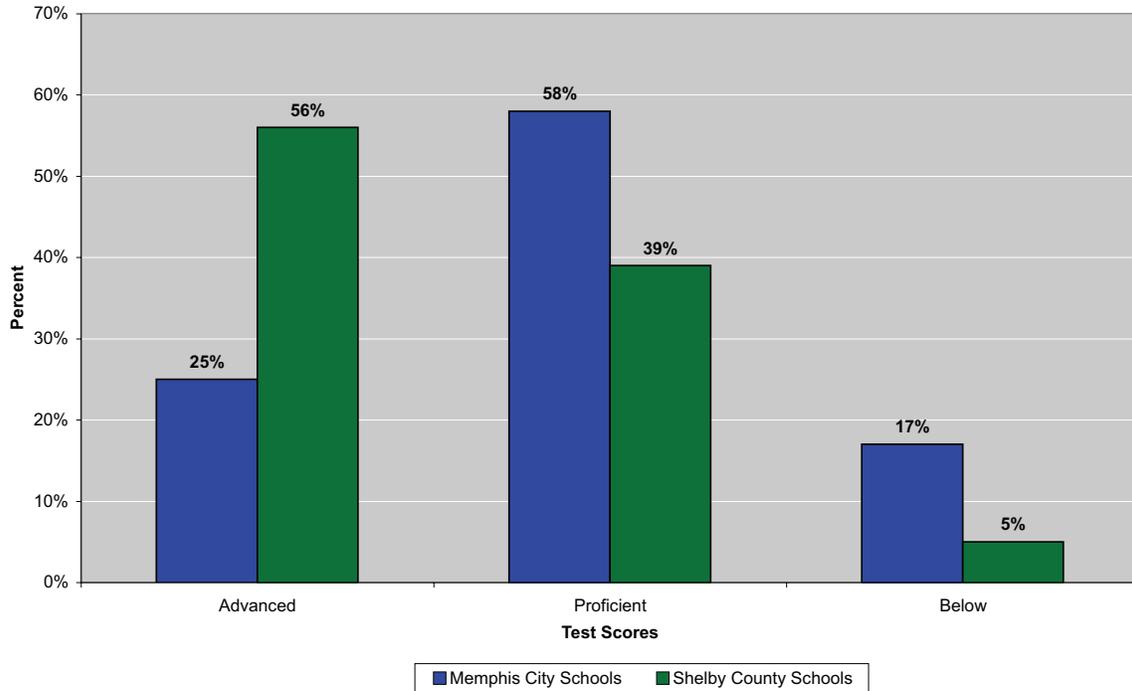
TCAP exams are scored to measure if a student is "proficient," meaning the student has mastered the appropriate grade-level material. Tracking TCAP scores is said to provide a comparative analysis of student performance from year to year and across the aforementioned risk categories.

A weakness of TCAP, however, is that the definition of "proficient" has been lowered consistently to assure that enough students are "proficient" to be able to report that schools are in compliance with the Federal mandate. By lowering the test score needed to be "proficient" schools can report student progress in the percentage of "proficient" students each year even though students actually are answering fewer questions correctly each year.

TCAP is not the only measure of student achievement. The National Assessment of Educational Progress (NAEP), is an exam given every two years to a representative sample of students across the country, and it paints a much less encouraging picture of how well students are learning.

After downward adjustments of "proficient" and "advanced," most students in MCS and SCS are at or above grade level in reading and math on the TCAP, although gaps persist among at-risk students even using TCAP achievement measurements.

### Percentage of All Students in Memphis City and Shelby County Schools by K-8 TCAP Reading Scores, 2007



Source: TN Department of Education, 2007

SCS students are more than twice as likely as MCS students to be above grade level (56% v. 25%).

Achievement gaps persist in both reading and math between low and middle-income family students, students with disabilities, students of different races and students with limited English proficiency.

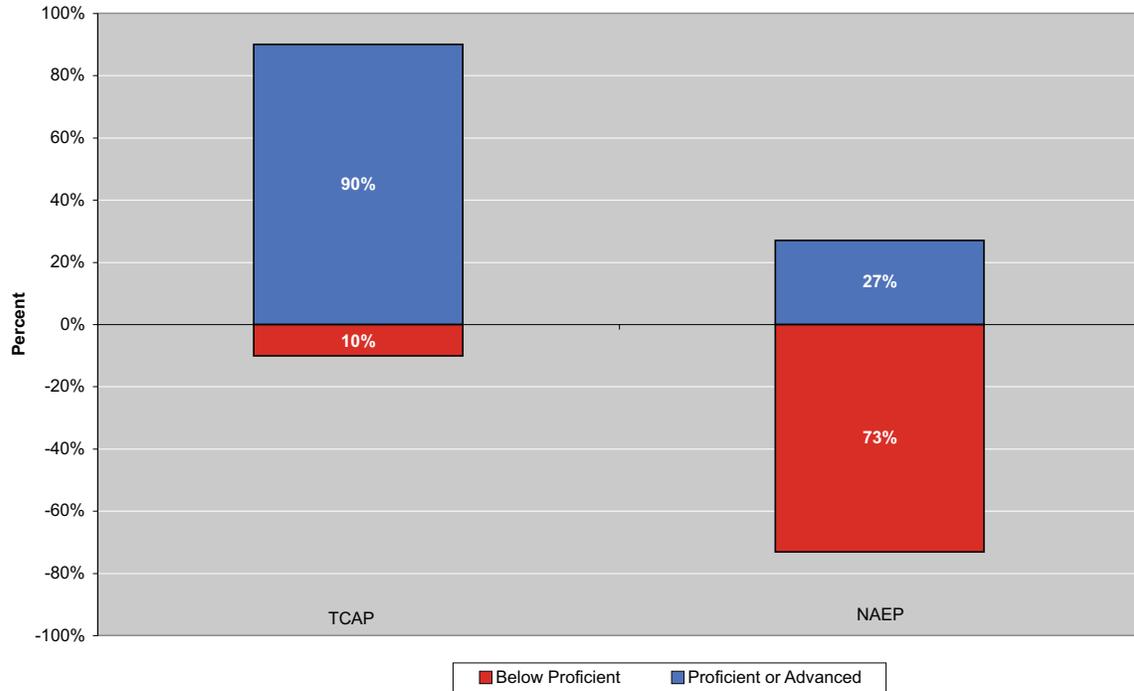
### Confidence in TCAP performance by Tennessee students is undermined by results on NAEP.

A representative sample of students across Tennessee takes the NAEP alongside their peers across the country.

- Four out of five students in Tennessee earn scores of “proficient” or “advanced” on TCAP.

- Only one out of four Tennessee students earns scores of “proficient” or “advanced” on NAEP.
- State tests with large disparities between themselves and national test scores, such as Tennessee’s TCAP, are assumed to have less rigorous state tests.

### Percentage of Students by Reading Achievement: Gaps Between the TCAP and NAEP, Tennessee & U.S., 2007



Source: TN Department of Education, 2007 and US Department of Education, 2007.

## Student transience makes teaching difficult.

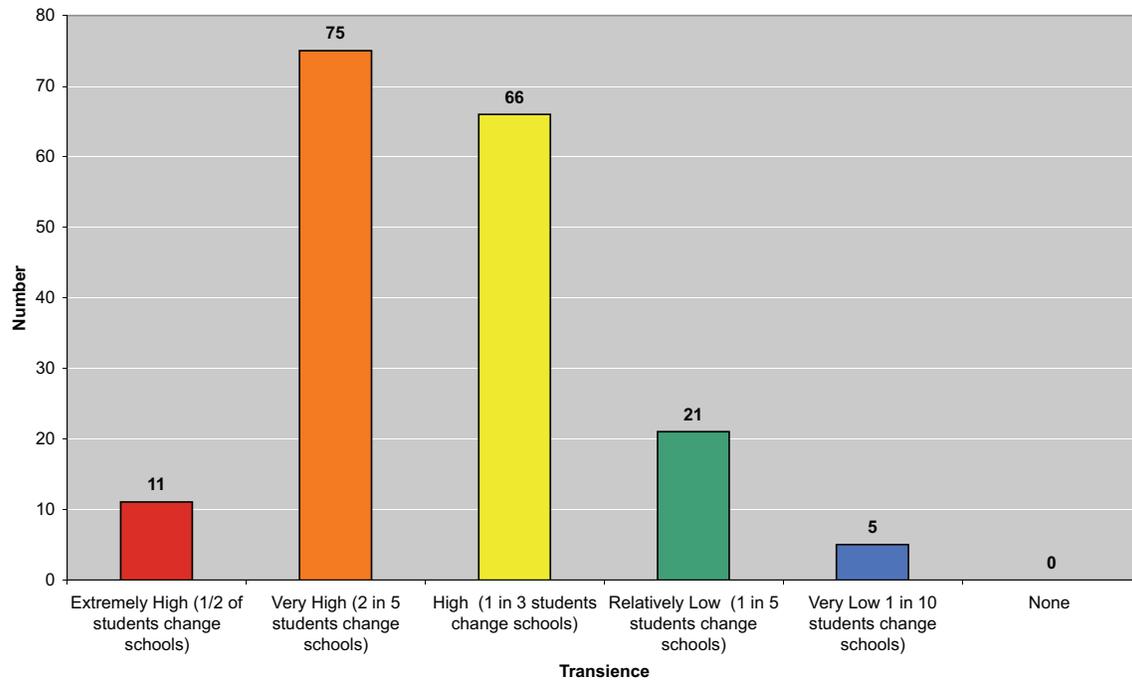
Stability is important to a child's social, emotional and educational development. When students are shuffled in and out of schools their ability to concentrate, settle into a schedule, build relationships with other students, teachers and administrators is disrupted.

Students from low-income families are more likely to change residences and schools.<sup>27</sup> When students move frequently, as does one out of three MCS students, the likelihood that they will drop out increases.

Family transience, and its negative effects on school success, is a nationwide problem. As demographer Harold Hodgkinson states, a typical teacher in Florida would say, "I had 24 students in the fall, 24 students in the spring, but 22 of the 24 are different students from the ones I started out with."<sup>28</sup>

- Children in Memphis are likely to move three times a year before they start kindergarten.
- One out of three children in MCS changes schools for reasons other than grade promotion every year.

### Number of Memphis City Schools by Mobility/Student Turnover, Memphis, 2006



Source: Memphis City Schools, 2006.

- In 11 of the Memphis City Schools at least half of students changed schools during the school year.
- In 141 Memphis schools, 80 percent of the schools in the district, more than one out of three students changed schools during the school year.
- Only five schools in the district had a relatively stable student population.
- Student transience in MCS has increased dramatically since 1999.<sup>29</sup>

Nothing is more important to the future of Shelby County than decreasing the number of citizens who live in poverty. We must break the cycle of poverty.

The key to breaking the cycle of poverty is quality child care options that allow parents to go to school or work while children are being prepared by professionals to be successful in school. The gains that are made early must be sustained when children reach kindergarten and beyond through a shared commitment to quality public education.<sup>30</sup>

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## Glossary

**At-risk children and students** – Defined by national testing standards as those who come from economically disadvantaged backgrounds, have difficulty with English, have a learning disability and/or living in a low-income family or in poverty.

**Poverty** – An income level defined by the U.S. Department of Health and Human Services which categorizes minimums necessary to sustain individuals and families.

**Near poor** – A term coined by the authors of *The Missing Class: Portraits of the Near Poor in America* that refers to fragile families that are between 100 percent and 200 percent of the Federal poverty level.

**Economically disadvantaged** – A specific educational category that refers to students who live in families below 185 percent of the Federal poverty level and are eligible for free and reduced price lunches.

**Early Literacy** – A definition of children of pre-school age who receive from care-givers experiences such as reading, singing, saying rhymes and naming objects.

**Pre-Kindergarten** – A program to educate three and four-year-olds in classroom settings while functioning as childcare with emphasis on social, emotional, physical and cognitive preparation for Kindergarten.

**Transience** – A term used to describe the movement of students from one school to another during the school year for reasons other than grade promotion.

## From conception to Age 3: Building the brain



The Urban Child Institute (TUCI) focuses on children from conception to age 3 because it is during this period that 80 percent of the human brain develops. Many people assume that development of the brain does not begin until birth. It begins at conception, and the

nine months in utero is a critical period for brain development. Following is a brief description of what is known about human brain development and why this earliest period is the foundation that influences the rest of an individual's life.

## Brain

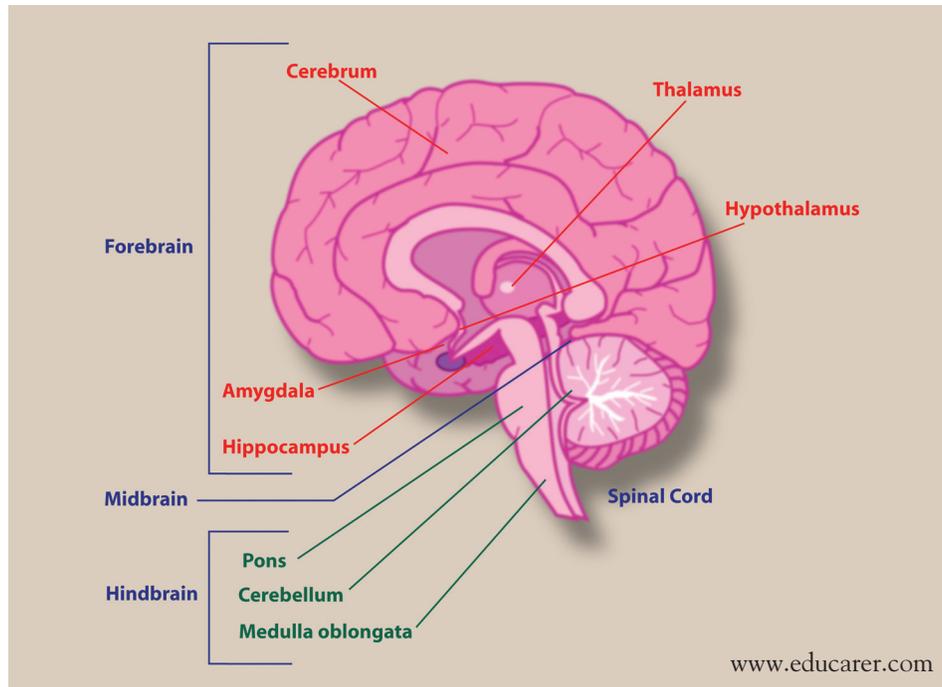


FIGURE 1

### First trimester in utero: The central nervous system

The central nervous system consists of the brain and the spinal cord. The spinal cord matures first, then the lower brain, or brainstem. Finally, the thinking part of the brain, known as the cerebral cortex, develops.

The nervous system begins to develop immediately following conception. The neural tube forms from the neural plate which appears by 16 days after conception. By 27 days the neural tube has closed and begun to transform into the brain and spinal cord of the embryo.

If the neural tube fails to close at the upper end of the embryo, the baby may be born without its cerebral cortex and only a very rudimentary brainstem. This condition is known as *anencephaly*, and is fatal. If the neural tube fails to close at its lower end, a condition known as *spina bifida* occurs. In this situation part of the spinal cord may develop outside the spine and be subject to damage easily.

Mothers can now take folic acid in the first few weeks of pregnancy and significantly reduce the possibility of neural tube defects.

## Nerve Axon

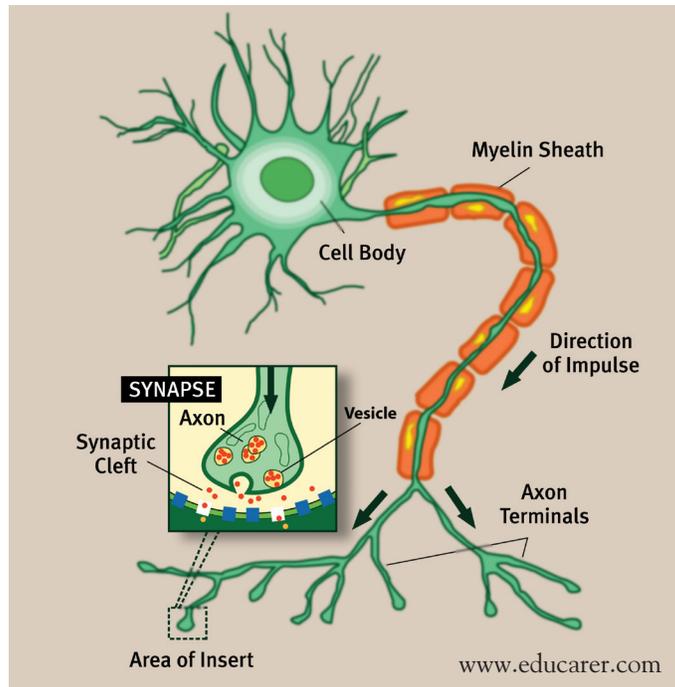


FIGURE 2

About five weeks after conception nerve cells known as neurons begin to develop connections in the fetal spinal cord. The connections between these neurons are called *synapses*. By the sixth week these early neural connections allow the fetus to make its first movements,

which can be detected by ultrasound. More coordinated movements develop over the next several weeks even though most women can not detect fetal movements until about 18 weeks.

### Second trimester in utero: The brainstem

The brainstem connects the spinal cord with the upper brain. During the second trimester of pregnancy the brainstem begins to control many of the most critical reflexes. These include sucking and swallowing reflexes, control over heart rate, breathing and blood pressure and development of the rhythmic contractions of the diaphragm and chest muscles. These contractions become the basis of breathing.

Most of these functions are operating by the end of the second trimester, and it is at this time that babies first become viable.

## Third trimester: Cerebral cortex

The cerebral cortex is the portion of the brain that is responsible for higher brain functions such as feelings, memory and thought. It is the final part of the central nervous system to develop.

Fetuses in the third trimester can demonstrate primitive learning. They can respond to certain sounds such as a mother's voice, for instance.

**Fetuses can be affected even by what occurs outside the womb. They can be affected positively or negatively by the levels and tones of voices, music and other sounds.**

A newborn has most of its neurons at birth. Yet, it is only after birth that the cerebral cortex begins to show its remarkable ability to assimilate and integrate the complex set of stimuli that the newborn and young child faces in the first years of life.

### Development of the Human Brain

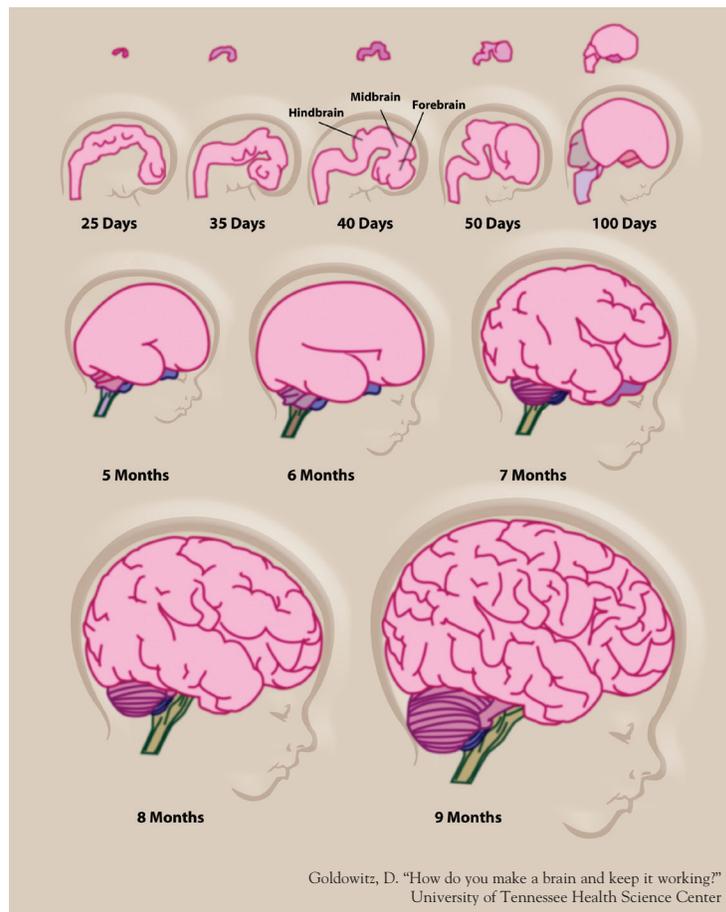


FIGURE 3

## Year One after birth

The brainstem controls most of the earliest activities of a newborn such as crying, sleeping, grasping, sucking, rooting and primitive reflexes. Thus most of the basic instincts and reflexes necessary for survival already are operating at birth. The cerebral cortex is somewhat “loosely wired” but is prepared to become “hard-wired” in the next few years.

A few facts about what goes on in the cerebral cortex *in utero* and the first few years of life demonstrate the incredible potential of a newborn. Among these are:

- By four to five months of gestation the fetus has 100 billion neurons.
- Neurons are being created at the rate of 250,000 per minute.
- The brain is being “wired” as the neurons develop connecting synapses.
- Within eight months after birth the infant brain may have as many as 1,000 billion synapses.

A natural pruning process reduces the number of synapses to about 500 billion by age 10 which is approximately the number of synapses found in the adult brain.

**The pruning process is determined, in part, by a “use it or lose it” phenomenon. Synapses that are being used persist. Those that are not stimulated disappear.**

All senses enhance the development of synaptic connections within the young brain. These include:

- Touch/feeling
- Sound
- Vision
- Taste
- Emotional expressions
- Smell

### Development of Neurons and Synapses

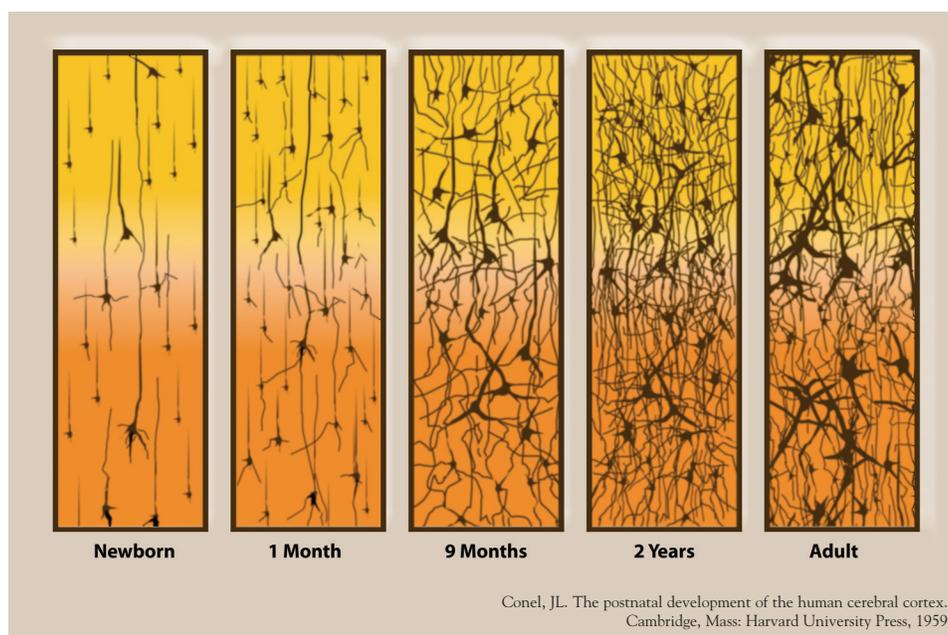


FIGURE 4

## Early brain 'messages' are critical.

A stimulated neuron sends a message electrochemically down its long tail (known as an axon). Dendrites branch off the axon and connect with each other creating synapses. Signals are sent across synapses through chemical neuro-transmitters. When a dendrite receives these signals it translates them into electrochemical messages, and the entire process is repeated through multiple neurons.

The earliest "messages" that the infant brain receives have an enormous impact. Parents and other care-givers play critical roles in helping to stimulate these infant brains with the right messages. Loving, looking into a baby's eyes, touching, talking, singing and repeating the sounds and facial expressions of the infant all provide an ideal stimulus for an infant's growing brain.

## Myelination allows hard-wiring of the brain.

Besides synapse formation and pruning, the other important post-natal event in the developing brain is known as myelination. Myelination represents a biological insulation that covers the brain cells and enhances the efficiency of the electrical transmission of signals along and among the neurons. It allows for much faster processing of information and accomplishment of more complex mental tasks.

The level of exposure to language is crucial in the overall cognitive development of a young brain.

**By age 4 a child of professional parents typically has heard 45 million words. A 4-year-old in an impoverished family will have heard, on average, 12 million words.**

Language content also plays an important role. Research studies have demonstrated that impoverished children heard two negative statements for each positive statement. Children from families in which both parents are professionals heard six positive statements for each negative. Scientists believe that differences in the number and types of words to which young children are exposed have a major impact on school readiness.

Most myelination occurs in the first two or three years of life, but some may continue into early adult life. Myelination promotes "hard-wiring" of the brain.

The brain can generate new neurons and synapses well into adulthood, but it is at a fraction of the rate of the youngest years. It is in these earliest years that the brain demonstrates its greatest plasticity.

## The brain's glial cells

Most of an individual's neurons develop in utero. The post-natal growth of the brain is largely due to the development of synapses, the myelination process and the post-natal proliferation of the other principal brain cell known as the glial cells. These cells provide the scaffolding for the neuronal network. They also produce myelin and are involved in most defense and inflammatory responses in the central nervous system.

Severe emotional and psychological deprivation may cause a child's brain to develop to

only 70 to 80 percent the size of a normal child's brain. Chronic negative stress can produce elevated levels of the hormone cortisol that can have an adverse effect on brain development. Among factors thought to produce negative stress in young children are:

- Extreme poverty
- Emotional or physical abuse
- Serious threats
- Repeated exposure to violence

## Brain damage from pre-natal alcohol

Excessive alcohol consumption by a pregnant woman can have a very deleterious effect on fetal brain development. **Fetal Alcohol Syndrome is the most common, preventable cause of mental retardation in America.**

The figure below shows severe damage to the brain of a five-day-old infant whose mother consumed large amounts of alcohol during pregnancy. The brain at right is normal.

Brain Damaged Prenatally by Alcohol

Normal Brain

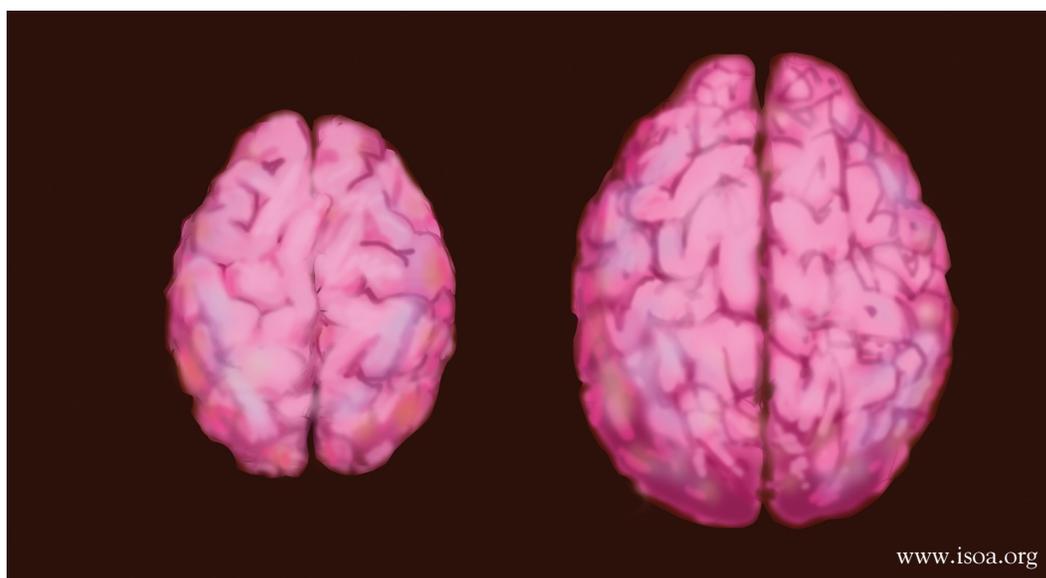


FIGURE 5

## Nature vs. Nurture

Both nature and nurturing contribute to brain development. The two influences work together to produce the final product. Genes (nature) determine when, where and how many brain circuits are formed. The infant's environment (nurture) then shapes how those circuits are stimulated and used.

Data from many studies, mainly involving relatively small numbers of young children, demonstrate the impact that early

positive interventions have on the outcome of children. These studies demonstrate a very positive return in education and employment achievement, as well as decreased cost to society in terms of lower rates of incarceration, and need for special education and welfare.

These same studies have demonstrated the most impressive effect on those children who might be considered at highest risk.

## Nutrition in the first months of life

Good nutrition is critical to supporting the growth of the brain's network of neurons throughout childhood. While formula offers an adequate alternative, there is ample evidence that breast milk provides the optimal nutrition for newborns. In addition to the well established psycho-social, economic, environmental and numerous health benefits associated with breast-feeding, it appears there is a link

between breast-feeding and enhanced brain development. The reasons remain controversial, but many researchers believe that chemicals in breast milk encourage brain development. Unfortunately, despite its numerous benefits, breast-feeding rates in Shelby County are among the lowest in Tennessee.

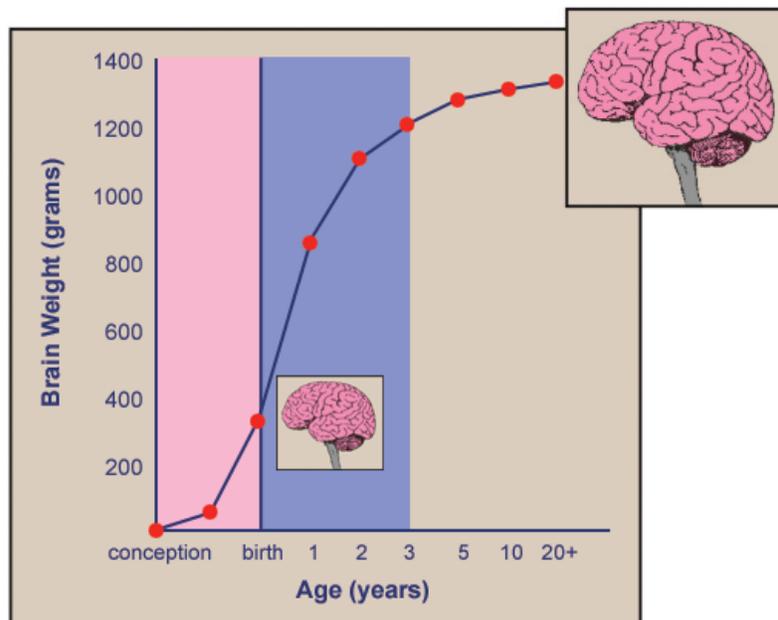


FIGURE 6

## Summary

**Positive interventions from conception through the first three years of life have measurable impacts on brain development.**

TUCI believes that an investment in early childhood pays positive dividends over a lifetime. This is particularly true for young children considered at greatest risk. Addressing the existing inequalities in Memphis and Shelby County is not only a practical investment in the community's future but a moral issue as well.

It is the institute's commitment to become the primary resource for objective data about children in our city and county in order that better decisions are made about where and how the community should invest so that every child has a running start to success.

## Glossary

**Neuron** – A nerve cell.

**Axon** – The tail of a neuron.

**Synapse** – The region where communication between nerve cells occurs

**Dendrite** – A branch off the axon of a nerve cell

**Myelination** – The process in which nerve cells are insulated with a substance known as myelin. The result is improved efficiency of nerve signal transmissions

**Glial Cells** – Brain cells that serve as a scaffolding for and support the growth of neurons

**Fetal Alcohol Syndrome** – A condition that may result in mental retardation of infants born to mothers who consume excessive alcohol during pregnancy

# The economic burden of preterm and low birth-weight (LBW) births



This section summarizes pre-term and LBW statistics for the United States, Tennessee and Shelby County.

In 2005 1,711 infants weighing less than 2,500 grams were born in Shelby County. They accounted for 11.8 percent of total live births in the county but were responsible for 75 percent of total hospital expenses for deliveries, or \$22 million. That is an average cost of almost \$13,000 each.

Nationally, extremely preterm (<28 weeks) births are only six percent of all births but require one-third of all costs through the age of 7, according to the Institute of Medicine (IOM).

### Total Medical Costs of Preterm Births in the U.S, 2005

Gestational Age (weeks)	Total Inpatient and Outpatient Costs	
	Total (Billions of 2005 Dollars)	Per Preterm Infant (2005 Dollars)
Infant born < 28 weeks	\$6.1	\$198,945
Infant born 28-31 weeks	\$5.1	\$100,725
Infant born 32-36 weeks	\$4.9	\$11,415
<b>Total</b>	<b>\$16.1</b>	

SOURCE: Table 12-7, *Preterm Birth: Causes, Consequences, and Prevention*, Richard E behrman and Adrienne Stith Butler, Editors, Washington DC: The National Academies Press

NOTE: Costs are incremental, above those term birth, through age 7 years, with costs beyond infancy discounted to the year of birth at a 3 percent rate. Outpatient car included prescription medications.

- In the U.S. total medical care costs associated with infants born prior to 37 weeks gestation were \$16.1 billion in 2005. These costs were incremental, above those of term birth, through age 7 and discounted at a three percent rate.
- Per-infant cost increases dramatically as the gestational age decreases.
- About six percent of infants are born at less than 28 weeks, according to the IOM book, *Preterm Birth: Causes, Consequences and Prevention*, but they represented \$6.1 billion, or nearly 38 percent, of the \$16.1 of total medical care costs (p. 337).
- The data are based on the 1998 to 2000 birth cohort in the U.S. Normal survival after infancy was assumed.

### Estimated Lifetime Cost of Preterm Births, U.S., 2005

Gestational Age (weeks)	U.S.	
	Total (Billions of 2005 Dollars)	Infant (2005 Dollars)
Medical care costs (infants)	\$16.9	\$33,210
Maternal delivery costs (mothers)	\$1.9	\$3,800
Early intervention services	\$0.6	\$1,203
Special education costs for 4 DDs*	\$1.1	\$2,150
Lost household and labor market productivity	\$5.7	\$11,200
<b>Total</b>	<b>\$26.2</b>	<b>\$51,289</b>

SOURCE: Table 12-1, *Preterm Birth: Causes, Consequences, and Prevention*, Richard E. Behrman and Adrienne Stith Butler, Editors, Washington DC: The National Academies Press

NOTE: Costs are lifetime estimates discounted at a 3 percent rate; >85% of medical care costs are delivery in infancy  
 \*4 DDs = the four developmental disabilities (cerebral palsy, mental retardation, vision impairment, and hearing loss)

- Lifetime costs include medical delivery costs, costs due to early intervention, social programs, special education services, disabling conditions and lost household and labor market productivity
- Excess lifetime medical care costs amounted to \$16.9 billion in 2005 dollars in the U.S. Excess maternal delivery costs were \$1.9 billion in 2005 dollars.
- LBW and preterm births have major impacts on special education resources for children ages 3 to 18. A child in special education costs 40 percent more than a child in regular school programs
- Each of the four major developmental disabilities is estimated to add \$2,150 per child annually to education costs, or \$1.1 billion nationally in 2005 dollars.
- Need for special education is prevalent for all premature or LBW children, even those without specific disabilities
- Cost estimates for preterm, or LBW infants, invariably are low. They emphasize mostly medical costs and explicit costs of the first few years of life and not many of the long-term social costs
- The majority of medical costs accrue in the first year of life, but substantial incremental costs of preterm birth, or LBW, extend after initial hospitalization for the majority of these infants, even if only a few weeks premature.
- Indirect preterm birth costs of lost household productivity associated with only four common conditions equal \$11,200 per case or \$5.7 billion total.

**Number of Low Birth-Weight Births in U.S.,  
Tennessee and Shelby County, 2005**

	Race			Total
	White	Black	Other	
<b>United States</b>				
Low Birth-Weight (LBW)	166,769	81,747	89,630	339,514
Total Live Births	2,284,505	583,907	1,172,007	4,140,419
LBW as % of Total Live Births	7.3%	14.0	7.1%	8.2%
<b>Tennessee</b>				
Low Birth-Weight (LBW)	5,195	2,536	167	7,898
Total Live Births	63,215	16,546	1,959	81,720
LBW as % of Total Live Births	8.2%	15.3%	8.5%	9.7%
<b>Shelby County</b>				
Low Birth-Weight (LBW)	413	1,249	49	1,711
Total Live Births	5,795	8,206	479	14,480
LBW as % of Total Live Births	7.1%	15.2%	10.2%	11.8%

SOURCES: Center for Disease Control and Prevention, National Center for Health Statistics, <http://www.cdc.gov/nchs/products/pubs/pubh/hestats/prelimbirths05/prelimbirths05.htm>, and Tennessee Department of Health, Division of Health Statistics, <http://health.state.tn.us/statistics/birth.htm>

NOTE: The "Other" race category includes Hispanics, Asians and other minority groups

- In the United States 339,514, or 8.2 percent, of 4.14 million live births in 2005 were LBW births.
- In Tennessee 7,898, or 9.7 percent, of 81,720 live births in 2005 were LBW births.
- In Shelby County 1,711, or 11.8 percent, of 14,480 live births in 2005 were LBW births.
- Among whites LBW births were 8.2 percent in Tennessee and 7.1 percent in Shelby County.
- Among blacks LBW births were 15.3 percent in Tennessee and 15.2 percent in Shelby County
- Among minority groups in the "Other" category LBW births were 9.7 percent in Tennessee and 11.8 percent in Shelby County.

**Inpatient Hospitalization Costs of LBW Births  
in Tennessee and Shelby County, 2005**

Birth Weight in Grams	Births	Length of Hospital Stay	Average Cost	Total Cost
<b>Tennessee</b>				
1) < 500g	25	64.4	\$126,015	3,093,929
2) 500g to 999g	647	49.4	\$76,177	49,316,661
3) 1000g to 1499g	1,120	31.3	\$34,688	38,862,704
4) 1500g to 1999g	2,168	15.1	\$14,520	31,483,853
5) 2000g to 2499g	3,937	6.5	\$5,853	23,047,030
All LBW	7,898	16.1	\$18,461	145,804,188
All Live Births	3,937	3.5	\$2,402	196,254,961
<b>Shelby County</b>				
1) < 500g	6	37.2	\$41,135	265,191
2) 500g to 999g	173	40.7	\$45,545	7,869,057
3) 1000g to 1499g	253	28.8	\$23,602	5,964,512
4) 1500g to 1999g	498	13.3	\$9,470	4,713,418
5) 2000g to 2499g	781	6.1	\$4,107	3,209,428
All LBW	1,711	15.2	\$12,871	22,021,614
All Live Births	14,480	3.6	\$2,024	29,307,652

SOURCE: Tennessee Department of Health, Hospital Discharge Data Set 2005

NOTE: Average costs were derived from billable charges by a cost-to-charge ratio of the admitting hospital

- The 81,720 live births in Tennessee incurred \$196,254,961 in hospital delivery expenses in 2005.
- LBW births accounted for 9.7 percent of total live births in Tennessee and were responsible for 74 percent, or \$145,804,188, of total hospital delivery expenses.
- In Shelby County, the 14,480 live births cost \$29,307,652 in hospital expenses in 2005.
- The 1,711 LBW births in Shelby County accounted for 11.8 percent of total live births but were responsible for 75 percent, or \$22,021,614, of total hospital expenses for deliveries.
- A 2008 article published in the journal *Pediatrics* by R. B. Russell et al.\* reported that in the United States eight percent of all infants born in 2001 had a diagnosis of preterm birth/low birth weight, but accounted for 47 percent of total inpatient hospitalization costs. LBW infants in Tennessee and Shelby County both are proportionately more expensive than the U.S. average.
- Across the different weight categories the lower the birth weight, the longer the length of hospital stay and the higher the costs.

\*Russell, RB, NS Green, CA Steiner et al. Cost of hospitalization for preterm and low birth weight infants in the United States, *Pediatrics* 2007, 120(1):e1-e9.

# Best Practices for Solutions



## Memphis is at the 'tipping point.'

Memphis and Shelby County have lost population for the first time since the Yellow Fever epidemics almost a century and a half ago. From 2000 to 2007 Shelby County lost 43,012 inhabitants, most from the City of Memphis, according to U.S. Census Bureau estimates. The eight-county Memphis Metropolitan Statistical Area (MSA) gained 16,485 residents primarily due to foreign immigration and the fact that most who left the city and county remained in the MSA.

In the meantime, though, Nashville's MSA gained 96,725, Atlanta 369,760, Birmingham 20,628, Little Rock 25,220, Louisville 24,698, Charlotte 190,631, Jacksonville 118,813 and Dallas 229,749.

"The ability of Memphis to serve as an economic magnet for people of this region . . . is clearly

in question," Dr. John Gnuschke, director of the Sparks Bureau of Business and Economic Development, was quoted as saying in *The Commercial Appeal*. "Unless we develop high-quality job opportunities in abundance, it is unlikely we will be an attractive place."

Memphis has problems that place it at a disadvantage compared to other cities. Our public schools must educate disproportionately more children per capita – and more poor children – than any other district in the state. Moreover, Memphis is rated one of America's most dangerous, least healthy and least educated cities.

To reach a preferred future for the city we must act now to invest wisely in the well-being of young children and their families.

## **We know what works. We just have to commit.**

Breaking the poverty cycle begins with education. Education begins at conception.

First steps are critical. To improve Memphis and Shelby County we must start with our children. We must take economic and social steps now to improve the well-being of the next generation and have positive impact on our entire community in the future. We must begin at conception.

We must decide how much money we can and are willing to invest and set measurable and achievable goals. We must decide what kinds of long-term social changes we want and then identify the best strategies to make those changes. We know that investing in very young children pays a tremendous return. Studies estimate a \$17 return for every \$1 invested.<sup>1</sup>

## **Pre-kindergarten learning determines a child's direction.**

Before entering kindergarten the experiences of young children are markedly different. Decades of research have demonstrated the deleterious relationships between poverty, single parenthood, attending failing schools, social disconnection, and the societal problems of teen pregnancy, school failure, unemployment, and crime.<sup>2</sup> Children from affluent families reach kinder-

Armed with reliable data about best practices and interventions that benefit children and families, we have the capacity to address the following variables:

- The up-front investment in very young children to improve Memphis and Shelby County
- The long-term return on investment from reduced crime, better education, lower unemployment and less reliance on public assistance
- A time frame for addressing these problems
- Our priorities for determining which constituencies can provide the greatest return

We can determine where we will achieve the greatest return on investment, both socially and economically, by focusing on the people most in need and implementing interventions that we know to be successful.

garten with cognitive scores 60 percent above those of children from poor families.<sup>3</sup> Parents with more resources have a greater chance of meeting their own needs of safety and security. Thus, they are able to focus attention on their children's needs.

Those needs include communication. That means hearing multiple words and positive affirmations in conversation daily.<sup>4</sup> They include a stable home life in a healthy, thriving neighborhood<sup>5</sup> and high-quality childcare.<sup>6</sup> Affluence allows parents the luxury of time to focus on their children. They can build healthy relationships with their children and steer their children into positive and healthy relationships and activities outside the home.

Research has shown that targeted interventions for young children, particularly from conception to age 3, can make a real difference in the outcomes of children who grow up in the circumstances that too many Shelby County children face. Targeted interventions can ensure the following:

- Children reach school ready to learn, prepared for academic and lifelong success.<sup>7</sup>
- Children have rich, nurturing and stimulating early childhood educations and social environments where they feel safe, loved and wanted.<sup>8</sup>
- Children live in stable families and are born to parents who are not children themselves,<sup>9</sup> who have finished school,<sup>10</sup> who avoid crime<sup>11</sup> and delay parenting until they are emotionally and financially ready.<sup>12</sup>

This is the current reality for children in Memphis and Shelby County:

- There were 15,324 children born in Shelby County in 2006.<sup>13</sup>
- More than half (8,535, 55.7%) were born to single mothers.<sup>14</sup>
- Fifteen percent (2,299) were born to teen mothers.<sup>15</sup>
- More than one in three (5,716, 37.3%) will be raised by single mothers whose education stopped in high school. These families will live on less than \$21,000 a year in 2006 dollars.<sup>16</sup>
- At home these kids will hear fewer words

and have smaller vocabularies when they begin school.<sup>17</sup>

- Their families are likely to move 15 times before the child enters kindergarten.<sup>18</sup>
- Nearly half (6,896, 45%) of the children who will enter first grade in 2012 will be from poor and low-income families.<sup>19</sup> Poverty rates are highest in younger families.

If current trends continue, of these children born in 2006 in Shelby County:

- Two out of three (9,487, 62%) will attend schools where most kids are poor or low-income. In the City of Memphis the number is much higher, with three out of four children attending minority, low-income schools.<sup>20</sup>
- One in ten (1,696, 11%) will attend special education classes.<sup>21</sup>
- Nearly one in five (2,620, 17%) will fail a grade.<sup>22</sup>
- By third grade children from poor families will have one-third the vocabulary of children from middle-class families (4,000 v. 12,000 words).<sup>23</sup>
- By fourth grade 13 percent will not be able to read at grade level (TCAP 13% below “proficient” in reading).<sup>24</sup>

To put Memphis and Shelby County onto a positive path for the future we must act now. Low-cost services that have little impact waste money. Responsible investments focus on effective programs that are implemented well and improved continuously.

There is a need for rigorous assessments to ensure that we are on the right track so that we can adjust quickly when necessary. The Center for Urban Child Policy has constructed the following matrix of best practice model programs for early childhood (on next page):

## The Memphis Matrix

Identity of best-practice program	Cost to fund fully in Shelby Co.	Eligible population in Shelby County	Human Benefits	Economic Benefits
<i>Chicago Child-Parent Centers</i>	\$663.8 million	50,947 between the ages of 3 and 9	<ul style="list-style-type: none"> <li>Reduces criminal activity and number of arrests, child abuse rates, grade failure, dropout rates, number who need special education<sup>25</sup></li> </ul>	<ul style="list-style-type: none"> <li>Reduces education costs</li> <li>Improves future earnings of participants</li> <li>Reduces criminal justice and crime-related expenses and costs associated with child abuse</li> </ul>
<i>Perry Pre-School</i>	\$180.8 million	9,983 between 3 and 4 years old	<ul style="list-style-type: none"> <li>Reduces teen pregnancy rates</li> <li>Extends length of relationships between unmarried parents</li> <li>Reduces dropout rates and special education needs</li> <li>Increases college attendance</li> <li>Reduces arrest rates</li> <li>Decreases number on welfare</li> <li>Increases pre-kindergarten test scores<sup>26</sup></li> </ul>	<ul style="list-style-type: none"> <li>Reduces costs of teen pregnancy</li> <li>Provides families with more economic stability</li> <li>Reduces education costs</li> <li>Reduces welfare costs</li> <li>Increases family incomes</li> </ul>
<i>Seattle Social Development</i>	\$149.3 million	38,940 between the ages of 6 and 11	<ul style="list-style-type: none"> <li>Reduces teen pregnancy and birth rates</li> <li>Reduces rates of school expulsion<sup>27</sup></li> </ul>	<ul style="list-style-type: none"> <li>Reduces costs associated with teen pregnancies</li> <li>Improves participants income</li> </ul>
<i>MIHOW</i>	\$20 million	5,074 women between the ages of 15 and 45	<ul style="list-style-type: none"> <li>Increases age of mothers at first birth</li> <li>Reduces future, unplanned pregnancies<sup>28</sup></li> </ul>	<ul style="list-style-type: none"> <li>Reduces costs associated with teen pregnancy</li> </ul>
<i>Nurse Family Partnerships</i>	\$20 million	1,970 women between the ages of 15 and 45	<ul style="list-style-type: none"> <li>Reduces significantly behavioral problems of participants' children</li> <li>Reduces number of future births</li> <li>Increases time between pregnancies</li> <li>Reduces welfare and food stamp needs</li> <li>Reduces number of injuries and trips to the doctor for participants' children<sup>29</sup></li> </ul>	<ul style="list-style-type: none"> <li>Fewer babies born to teens (\$7 million savings)</li> <li>Reduced time on welfare (\$.5 million savings)</li> <li>Reduced use of food stamps (\$.77 million savings)</li> <li>Reduces crime (\$25.6 million savings)</li> </ul>
<i>Teen Outreach Program</i>	\$15.6 million	17,434 between the ages of 14 and 18	<ul style="list-style-type: none"> <li>Increases age at onset of sexual activity</li> <li>Reduces unplanned pregnancies<sup>30</sup></li> </ul>	<ul style="list-style-type: none"> <li>Reduces costs associated with unplanned pregnancies</li> </ul>
<i>Infant Health Development Program</i>	\$475 million	8,167 low birth-weight babies	<ul style="list-style-type: none"> <li>Creates higher IQ scores</li> <li>Reduces behavioral problems<sup>31</sup></li> </ul>	<ul style="list-style-type: none"> <li>Kids with fewer disciplinary problems are less likely to be held back in school and graduate high school at higher rates<sup>32</sup></li> </ul>
<i>Incredible Years</i>	\$434 million	102,831 children between the ages of 2 and 10	<ul style="list-style-type: none"> <li>Increases problem-solving and conflict-resolution skills</li> <li>Reduces behavioral problems<sup>33</sup></li> </ul>	<ul style="list-style-type: none"> <li>Kids with behavioral problems are more likely to change schools. by reducing student mobility, we are increasing children's chances of completing high<sup>34</sup> school on time</li> </ul>
<i>Heathy Families New York</i>	\$16 million	4,666 expectant parents or who have a child under 3 months old	<ul style="list-style-type: none"> <li>Reduces number of low birth-weight babies</li> <li>Decreases incidence of child abuse<sup>35</sup></li> </ul>	<ul style="list-style-type: none"> <li>Decreases costs of low birth-weight babies and costs related to child abuse</li> </ul>
<i>Early Head Start</i>	\$526 million	12,479 expectant parents or parents with children up to 24 months old	<ul style="list-style-type: none"> <li>Increases college attendance, reduces criminal activity and number of arrests<sup>36</sup></li> </ul>	<ul style="list-style-type: none"> <li>Increases participants' incomes,</li> <li>Reduces costs associated with crime</li> </ul>
<i>Developmentally Supportive Care</i>	\$12 million	1,713 low birth-weight babies	<ul style="list-style-type: none"> <li>Increases scores of mental and physical indices at 12 and 24 years</li> <li>Reduces length of hospital stays for pre-mature and low birth -weight babies<sup>37</sup></li> </ul>	<ul style="list-style-type: none"> <li>Lower hospital costs for babies</li> </ul>
<i>Dare to Be You</i>	\$1 million	27,583 low-income children between 2 and 5 years old	<ul style="list-style-type: none"> <li>Improves family relationships</li> <li>Strengthens parent-child relationships</li> <li>Decreases behavioral problems<sup>38</sup></li> </ul>	<ul style="list-style-type: none"> <li>Fewer behavioral problems mean that children are more likely to stay in school and graduate on time.</li> </ul>
<i>Carolina Abecedarian Project</i>	\$6.8 million	61,574 low-income children between 6 weeks and 7 years old	<ul style="list-style-type: none"> <li>Decreases school failures and teen pregnancies<sup>39</sup></li> </ul>	<ul style="list-style-type: none"> <li>Reduces costs of education and teen pregnancies</li> <li>Increases income</li> </ul>

Any of these programs could be funded in Memphis. Rather than continuing with business as usual, we need to ask what we might do that would work better and would help us achieve a preferred future. To this end we must consider the more promising practices outlined in this chapter.

The Nurse Family Partnership is an example of best-practice programs. It is estimated to cost \$20 million to implement fully in Shelby County. It is an evidence-based, nurse home visiting program that improves the health, well-being and self-sufficiency of low-income, first time parents and their children. Eligibility criteria for the program are as follows:

- The mother must be between 15 and 45 years old.
- Below 100 percent of poverty level
- Have less than 12 years of education
- Be single
- Be less than 29 weeks pregnant with her first child

There were 1,970 women eligible for the Nurse Family Partnership program in Shelby County in 2006. If nurses had visited the homes of all 1,970 during pregnancy and throughout the first two years of their children's lives, we know that we could have expected the following monetary savings and other positive results:

- Reduced costs from fewer future pregnancies and longer spacing between pregnancies would have amounted to \$7,070,000
- Reduced time on welfare would have saved \$575,733.
- Reduced need for food stamps would have saved \$778,197.
- Reduced crime (394 arrests with the pro-

gram vs. 887 arrests without the program) would have saved \$25,697,625 each year.

- By age 2 the children of nurse home visited moms would have had 20 percent fewer health encounters for children's injuries or ingestions.
- By age 2 80 percent fewer injuries or ingestions requiring hospitalization would have occurred.
- By age 6 a much lower percentage of the children would have exhibited severe behavioral problems (anxiety, aggression, depression) as reported by their mothers (1.8% vs. 5.4%).

With this knowledge of 12 specific best-practice strategies and the information that the Memphis Matrix provides on eligibility and costs, what are the recommendations for next steps? How do we begin to move from where we are now to a more solid investment in services for children in the early years of life?

We suggest an early childhood (birth to age five) prevention fund. This means that local and state departments that provide services to treat children when developmental or environmental problems arise would dedicate a specific percentage of their budgets to initiatives that are designed to prevent those problems. Examples of those initiatives are included in the Memphis Matrix. In addition to adding more resources that are preventive and pro-active rather than reactive, this concept represents a shift in thought. That is to provide preventive initiatives as well as corrective programs.

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# Smart Talk

by Janie F. Haywood and J. Helen Perkins  
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## Improving children's oral language

We must continue to create a nation of readers. The skills needed for reading begin to develop in early childhood as children acquire oral language. Oral language refers to talking, listening, taking part in conversation, and understanding stories, for example. Early childhood teachers and caregivers play a critical role in children's language development.

By engaging children in oral language activities, we lay the foundation that will enable children to learn to read and write.

## Oral language precedes reading

Children begin to acquire language the day they are born. Their cries, their ability to distinguish sounds, and their coos and babbles are all beginning attempts at language. Their language continues to dramatically develop during their first three years (Savage, 2000).

According to Morrow, Strickland and Woo (1998), children imitate the language of adults and create their own when needed. Children will continue to use language when their attempts are positively reinforced.

During their early years, children need supportive adults who will engage them in conversation, read to them, and provide experiences in which they can learn new words (IRA and NAEYC, 1998).

Children also need adult role models for reading and writing activities—reading the newspaper and writing a note to parents, for example. Children with these experiences will have a tremendous head start when they begin school.

Oral language precedes a child's acquisition of reading skills such as *phonemic awareness* and *comprehension* (Reutzel and Cooter, 2003). *Phonemic awareness* is the ability to recognize the smallest units of speech sounds, and *comprehension* is the ability to understand what is read—identifying the story's main character or retelling a story that was read aloud, for example.

## Talking leads to learning

Children must have a receptive (listening) and *expressive* (talking) use of oral language so they can become successful readers (Clay, 1979). Talking to children helps build their vocabulary. *Oral vocabulary* refers to words children recognize in speaking or listening (National Reading Panel, 2000).

Children learn the meanings of most words indirectly; meaningful talk is powerful (CIERA, 2001). Children between the ages of 2 and 6 learn an average of 6 to 10 new words a day (Reutzel and Cooter, 2000). They learn these words through everyday experiences. They learn not only by talking with adults but also talking with other children.

Children also learn words by having books read to them. When 4- to 5-year-old children hear a single book reading, their expressive vocabulary significantly improves (Senechal and Cornell, 1993). Reading the same story several times allows children to hear adults repeat new words and to review words they find intriguing.

The size of children's spoken vocabulary is important. They will use the words from their oral language to make sense of the words they will read in text. In hearing *Little Bear's Friend*, for example, 4-year-old Jacob might recall how he made a new friend on vacation. The more children's oral language mirrors the written language they encounter, the more successful they will likely be in reading (National Reading Panel, 2000; Bridge, 1978).

When texts relate to oral language experiences, children quickly discover that written and oral language are parallel forms of language that serve similar purposes for communication (Reutzel and Cooter, 2000).

## A sampling of pre-reading skills

- Understands the function of a book.
- Recognizes that print represents spoken language.
- Recognizes that words represent names of people and things.
- Distinguishes letters from words.
- Recognizes that words are separated by spaces.
- Follows words left to right and from top to bottom.
- Understands that the sequence of letters in a written word represent the sequence of sounds (phonemes) in a spoken word (alphabetic principle).
- Demonstrates phonemic awareness by rhyming, clapping syllables, and substituting sounds.
- Matches sounds to alphabetic letters.
- Recognizes and names most uppercase and lowercase letters of the alphabet.
- Uses picture clues to aid understanding of story content.

## Rich oral environment serves as a scaffold

Teachers and caregivers can provide a scaffold for improving children's oral language. In simplest terms, a scaffold provides support for children while they are learning.

For example, an 11-month-old child is just beginning to walk but still falls sometimes. Her father reaches out his hand to help her to walk to her destination. She's excited because with his help she is able to walk without falling. She will need her father's hand for only a while; she will be able to walk by herself soon and no longer need the scaffold, or support, from her father.

More specifically, scaffolding is an adult-child collaboration that fosters cognitive growth, or learning (Berk and Winsler, 1995). For example, a 2-year-old points at the refrigerator and says, "Juice." While Ms. Haywood is opening the door, she says, "Crystal wants some juice." She takes out the juice and gives it to the child: "Here's some apple juice." The child is happy because she has what she wanted.

In this example, Ms. Haywood has provided a scaffold. She is saying in a complete sentence what the child will eventually say on her own. Ms. Haywood is also using standard English, not baby talk. By providing this support, Ms. Haywood is helping the child develop oral language and eventually become a reader.

Extending or rephrasing a child's attempts at speaking is one aspect of an environment rich in oral-language opportunities. Equally important is actively listening to children. Stopping what you are doing, gaining eye contact, waiting until the child has finished, and occasionally rephrasing what the child has said helps the child feel heard.

Active listening by an adult encourages a child to talk more, to try unfamiliar words, and to experiment with sounds. Another important element of a rich oral-language environment is reading to children. Children love hearing stories and are fascinated with the sounds of words. They will grow up connecting books and reading with warm, pleasant times. They will also imitate the reading habits of adults around them.

Discussing stories will help children understand how meaning is made. It will help them to understand the story and make their own meaning. Discussing stories will also help children to understand story elements such as plot, characters, theme, problem, and solution. (See box on next page for more reading tips.)

## Use books to stimulate oral language

- Always have available a variety of books.
- Choose high-quality books about topics such as animals, places, and things that children like.
- Choose books that positively reflect children's identity, home language, and culture.
- Discuss the story before, during, and after reading.
- Discuss the title and what might happen in the story. Encouraging the children to make predictions stretches their thinking and imagination.
- Point to the pictures and talk about them.
- Help children relate words to their prior knowledge and experiences such as taking a bath, eating, or playing outdoors.
- Read in a natural way, as if you were talking. Use expression by changing your voice tone with each character. Use hand and body gestures.
- Pause to explain unfamiliar words.
- Encourage parents to take advantage of times in the doctor's waiting room and at the laundromat by talking and reading to the children.

## Offer oral-language activities

A rich environment enhances children's language development indirectly. You can also enhance development directly by providing activities aimed specifically at improving oral language skills.

### Infants and toddlers

- **Read:** Read to infants for at least 30 minutes a day. Read stories or poems. While reading, position your mouth or face where the infant can see it. While reading to toddlers, encourage them to turn the pages.
- **Talk:** Talk to infants about what you are doing. Talk about changing the diaper, washing hands, and putting on shoes, for example. Use short and simple sentences.
- **Name surrounding objects:** Pronounce the names of objects that surround the baby such as bottle, diapers, and table. The baby will begin to connect the sound of the word to the object.
- **Look and listen:** Talk about what you see and hear. When a baby drops a spoon, for example, say, "Did you hear that? Your spoon hit the floor."
- **Give simple directions:** Give a toddler simple directions and recognition for completing the task. "Please go and get your cap." "Yes! You got your cap. Now you can put it on your head."
- **Provide toys:** Have stuffed animals, puppets, and other toys available for children because playing with them will encourage children to talk.

### Infants and toddlers (cont.)

- **Play “Follow the Leader”:** Encourage children to follow you around the room and name each object you touch.
- **Talk about family pictures:** Ask parents to send a family photograph (one they need not have returned), and encourage children to talk about it.
- **Ask open-ended questions:** Frame questions so they require the child to answer with several words, not yes or no. Ask questions such as “If you wanted to have more fun in this play yard, how would you change it?” and “What did you do at your grandmother’s house yesterday?” Be sure to listen while the child talks.

A rule of thumb is to begin questions with “wh” words. Questions that begin with *who*, *what*, *where*, *when*, and *why* (and how) encourage children to talk and to begin to explain their answers. They will use more words. Sometimes they will use words they didn’t know were in their vocabulary

### Preschoolers

- **Provide props:** Place props in the dramatic play center or use at circle time. A dentist kit, for example, may encourage children to talk about their experiences in going to the dentist.
- **Discuss art work:** Encourage children to discuss their creations: “Tell me about your painting.” “How did you feel while making this collage?”
- **Talk while playing:** Encourage children to talk while playing in the block building and dramatic play centers; these activities are interactive and collaborative. While children are playing and talking, their vocabulary will improve because they hear themselves and remember some of the words they have heard adults use.
- **Play “Objects in a Bag”:** Place a few items such as a cap, plastic cup, and spoon into a bag. Have the child pull an object from the bag and talk about it. The child can describe the object and talk about how it’s used.
- **Record sounds in nature:** Tape record sounds from outdoors. While playing sounds such as birds, moving vehicles, and dogs barking, encourage children to talk about what they hear. Encourage children to write about or draw pictures representing the sounds they hear.
- **Solve a puzzle:** While working with a child to solve a puzzle, talk about the pieces, colors, and shapes. Encourage conversation.
- **Take field trips:** Expose children to a variety of experiences by visiting the zoo, library, park, and museum. Encourage children to make comments and to ask questions. Encourage children to tell their families about their trip.
- **Read or tell a story every day:** Vary the reading format, using books as well as flannel board and puppets, for example. Have a well-stocked book center that children can use on their own.
- **Tape a story:** Read a story and record it

on tape. Make the tape available for children to play and enjoy as many times as they want.

- **Encourage pantomime:** Encourage a child to retell their favorite story or pretend to be a character from the book in front of a mirror.
- **Play a rhyme game:** Say “Ball rhymes with call.” Spell out the words–”Ball, b-a-l-l and call, c-a-l-l.” Encourage the child to say the words to feel and hear how they rhyme.
- **Sing:** Sing songs and chants. Be ready to sing the same songs over and over.
- **Read labels:** Help children to read the labels on items. Make labels for objects in the classroom, such as “wastebasket,” “door,” “blocks,” and “paint.”
- **Provide writing materials:** Encourage children to write by making available materials such as a variety of paper, pencils, non-toxic crayons, paints and brushes, and washable markers. Set up a special place for reading and writing.
- **Dictate a story:** Have the child dictate a story to you while you write what the child says.
- **Write notes:** Write the child a note, such as “Wow! You caught the ball three times today.” Read the note to the child in an expressive way.
- **Loan books from your library:** Set up a book lending program so children can take books home to read with their families. Oral language activities lay the foundation for future literacy learning. By providing a rich oral-language environment,

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