

# Health



## **Child health says a lot about the values of a community.**

Child health can be measured in various ways. For some it is a measure of a few commonly accepted markers; these typically include infant mortality rates, other birth outcomes, and child death rates. Others take a broader view and see child health as a reflection of those items plus many other factors that influence a child's overall well-being.

This section of the Data Book attempts to incorporate both approaches. First, we examine infant mortality, low birth weight, and prematurity in Memphis and Shelby County, including comparisons with state and national trends; next, we examine a variety of child and adolescent high-risk behaviors which can negatively affect child health.

## Shelby County ranks near bottom on most child health measures.

The Annie E. Casey Foundation's *Kids Count* project collects national and state-level information on children's educational, social, economic, and physical well-being. In the *Kids Count 2008* report, Tennessee ranked 42nd of the 50 states,

and in most areas Shelby County lagged behind the rest of the state (Annie E. Casey, 2008). Data on child health in Shelby County are grim for almost all reported categories, but particularly for black infants.

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

The infant mortality rate (IMR) reflects the number of deaths that occur in the first 12 months of life per 1,000 live births. It reflects the commitment of a community to infants and young mothers, and is an indicator of access to care, quality

of care, socioeconomic conditions and public health intervention. Despite the fact that one out of every six dollars is spent on healthcare nationwide, the U.S. has a higher IMR than many other nations.

## In Shelby County, over 80 percent of deaths in the first 14 years occur in infancy.

In 2006, there were 158 infant deaths in Shelby County that occurred within the first month of life. These deaths accounted for 76 percent of all deaths within the first year of life<sup>1</sup>.

Infants who die in their first month are usually those who are born very prematurely or with serious congenital anomalies, particularly of the cardiovascular system 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.

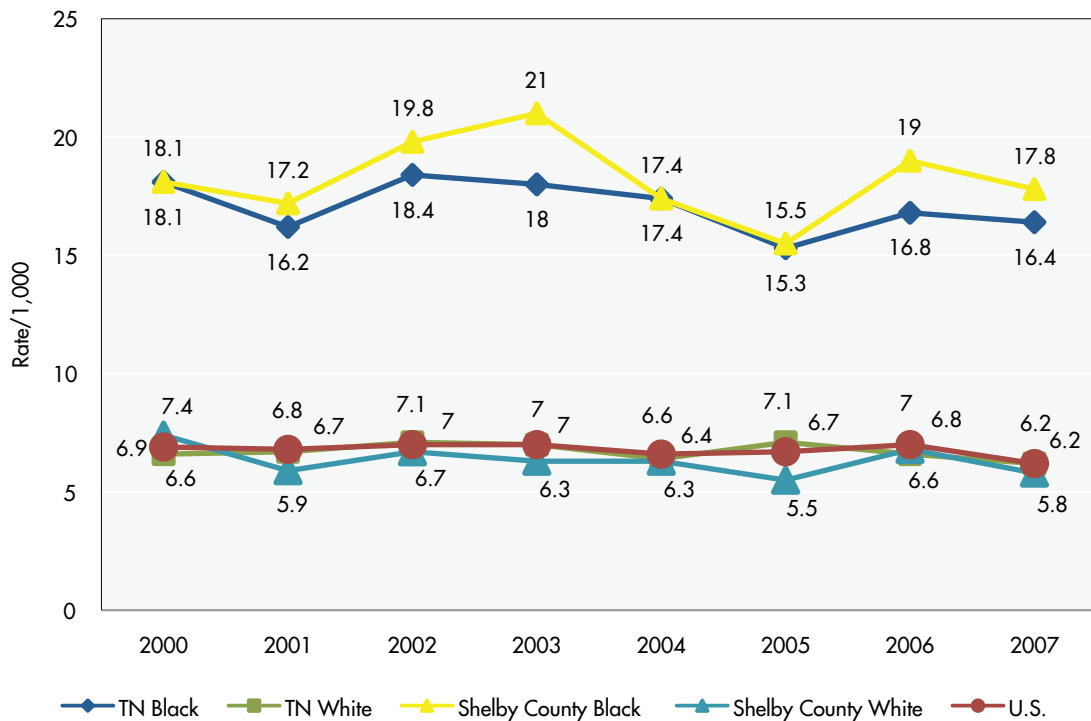
<sup>1</sup> Numbers derived from Tennessee Department of Health, Vital Statistics, 2006.

## The black IMR in Shelby County is more than triple the IMR of whites in Shelby County.

Because there is no universally used method of reporting IMR, there has been debate concerning the usefulness of comparing infant mortality rates in Memphis to other cities and especially other countries. While such comparisons may be misleading, tracking changes in IMR over time within our community does provide a valuable measure of how Memphis is progressing in this crucial area of child health.

The black IMR in Shelby County remains triple the rate among white infants in Shelby County and the overall U.S. rate. Since 2000 the IMR for blacks has remained static while the IMR for white infants in Shelby County has declined by 22 percent (Figure 1). This pattern is also evident statewide, where the IMR of black babies is double the IMR of white babies (Figure 1).

Figure 1: Infant Death Rate per Thousand Births by Race, Shelby County, Tennessee & United States, 2000-2006



Source: Tennessee Department of Health, Vital Statistics, 2000-2006 and CDC, Vital Statistics 2000-2006, and provisional data for 2007

## **The reasons for differences in mortality between black and white infants are unclear.**

While blacks as a group have less income than whites, the correlation between poverty and infant mortality is inconsistent.

Among both black and white mothers higher educational levels are correlated with lower infant mortality rates. Nevertheless, college-educated, non-smoking black women have a slightly higher IMR than do smoking white women who have not graduated from high school.

A black infant born after 37 weeks of gestation (considered full term) has a higher infant mortality rate (1.74 times) than a full term white infant.

The high IMR in Memphis has led to a commitment from state and local health and political leaders to specifically address this issue in Shelby County. Hopefully, improved interventions will have an effect, and there will be a future decline in IMR.

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

The more premature an infant is 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 is frequently used as a measurement of premature birth because determining exact gestational age is often difficult.

- Babies with normal birth-weight (at least 2,500 grams, or 5 pounds 8 ounces) 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, or 3 pounds 5 ounces) have an IMR of 256 per 1,000. This is 77 times higher than that of normal birth-weight infants.
- Black infants are more likely than whites to be born prematurely and at a low birth-weight.

The rate of low birth-weight/premature births has increased nationwide, although there was a slight decline in premature births nationally in 2007 (Stobbe, 2009). In both Tennessee and Shelby County, the rate of low birth-weight newborns has remained constant over the past six years (Figure 2).

The good news in this area is that an increasing percentage of premature infants are born between 32 and 37 weeks of gestation and that there has been a slight decrease in those born before 32 weeks gestation, which is the group at highest risk for death. This trend, along with the improved care provided for premature babies, should ultimately contribute to an improvement in the IMR.

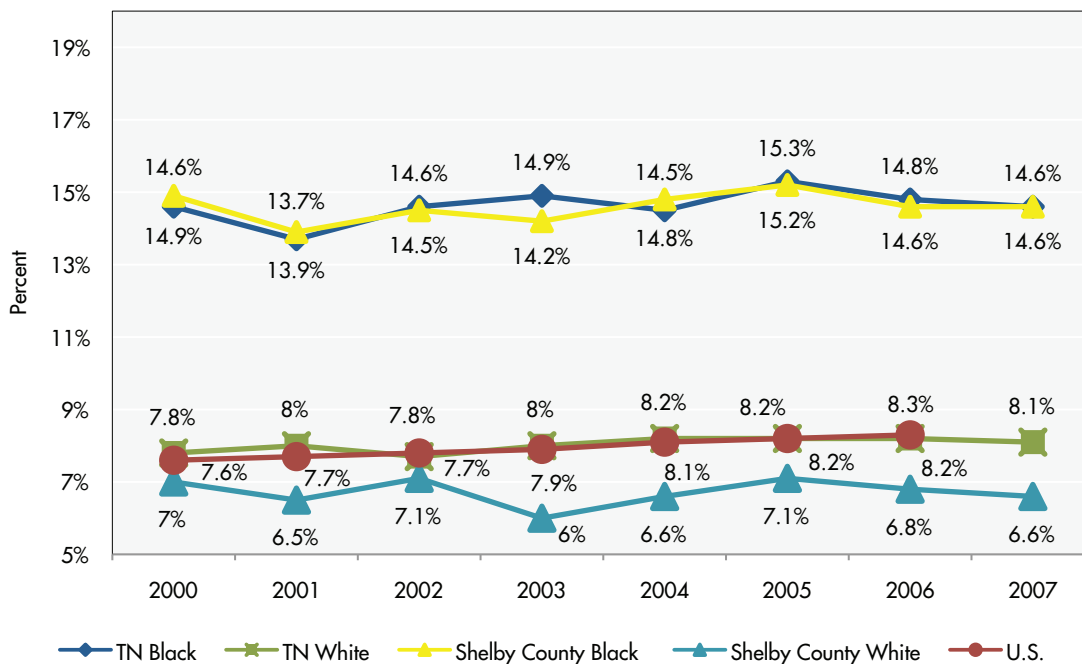
## Black mothers are more than twice as likely as white mothers to give birth prematurely.

Prematurity and low birth-weight are influenced by social, economic, biological and genetic factors. There have been many efforts to reduce prematurity; one example is the effort to extend early prenatal care to more women. Earlier prenatal care improves the health of both the mother and the fetus, and contributes to a reduction in infant mortality. However, it has not been shown to consistently reduce premature births. A disturbing

trend in Shelby County is the 21 percent decline in mothers who received adequate prenatal care from 2000 to 2006 (Annie E. Casey, 2008).

Although we know more about factors that influence a mother going into labor, we still have an incomplete understanding of premature labor (Behrman & Butler, 2006).

Figure 2: Percent Low Birth Weight Births, Shelby County, Tennessee & United States, 2000-2007



Source: Tennessee Department of Health, Vital Statistics 2000-2007 and CDC, Vital Statistics, 2000-2006

## Birth rates among black teens are twice as high as among white teens in both Shelby County and Tennessee.

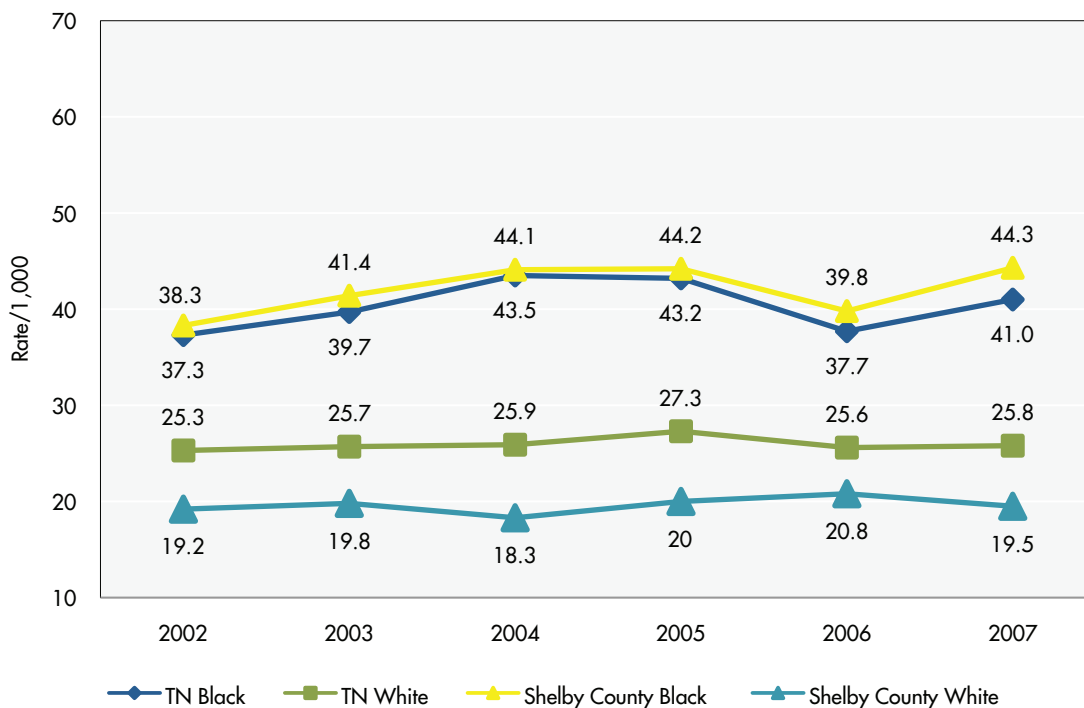
Pregnant women at greatest risk for delivering prematurely are those who are less than 20 years old at the time of delivery and those in their late 30s and older. Of the 15,000 births in Shelby County about 15 percent are to teenage mothers. In addition to having a higher IMR, children of teenage mothers are also likely to grow up in poverty and have poor health (Furstenberg, 2007; Wolfe & Perozek, 1997). Thus the risks for children of teenage mothers continue throughout life.

Nationally, birth rates among teenagers have been declining steadily since 1960. In Tennessee and Shelby County the rates of teenage births among

whites remained unchanged from 2002 through 2007, while the rate among blacks increased slightly (Figure 3). In Shelby County, the birth rate among black females ten to 19 years old is more than twice that of white girls ten to 19.

Programs focused on reducing teen pregnancy vary widely. Some focus on abstinence, others on the use of contraception, while others emphasize the importance of parents, peers or adult mentors discussing sexuality with teens. It is unclear, however, which factors have contributed the most to the decline in births to teenage mothers.

Figure 3: Birth Rate per Thousand Females  
Ages ten through 19 by Race, Shelby County & Tennessee, 2002-2007



Source: Tennessee Department of Health, Vital Statistics, 2002-2007 and American Community Survey, 2002-2007, B101001A and B101001B.

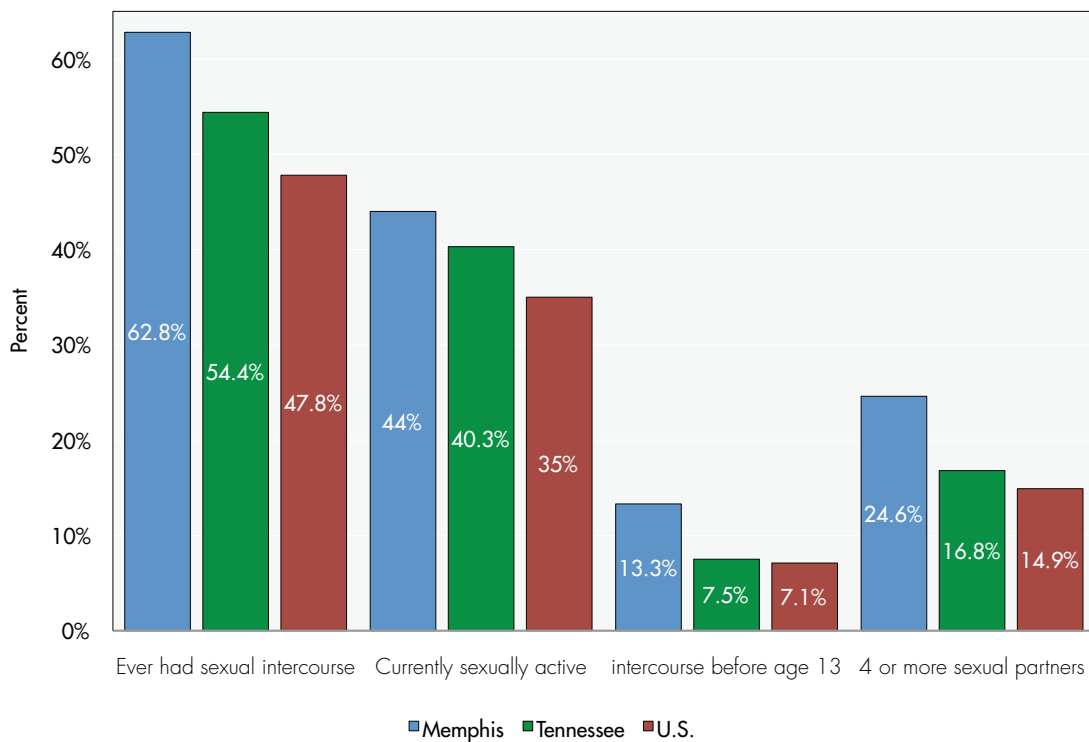
## Shelby County students' sexual activity leads to a variety of problems.

High school students in Memphis and Shelby County report more sexual activity than do their counterparts across the state. Also, a higher percentage report 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. Many adolescents in Memphis and Shelby County are exposed to one or more of these risk factors (Kotchik *et al.*, 2001; Little & Rankin, 2001).

**Figure 4: Percentage of High School Students by Sexual Activity, Memphis, Tennessee & United States, 2007**



Source: Youth Risk Behavioral Surveillance Survey, 2007,  
<http://apps.nccd.cdc.gov/yrbss/SelQuestYear.asp?Loc=XX>



## **High teenage sexual activity rates equal high disease rates.**

High rates of adolescent sexual activity translate into high rates of sexually transmitted diseases. Approximately 40 percent of ten to 19 year olds in Shelby County have reported being infected with chlamydia, syphilis or gonorrhea (Figure 5). Consequences of these infections often go beyond the short-term difficulties that they may cause. In females, these infections can lead to infertility,

scarring of the fallopian tubes or complications with future pregnancy. Other risks include premature or low birth-weight babies, stillbirth, congenital malformations, and infections of multiple organ systems. Hopefully the relatively high use of condoms by Memphis high school students may be an indicator that the high rates of STDs may begin to decline over the next several years (Figure 6).

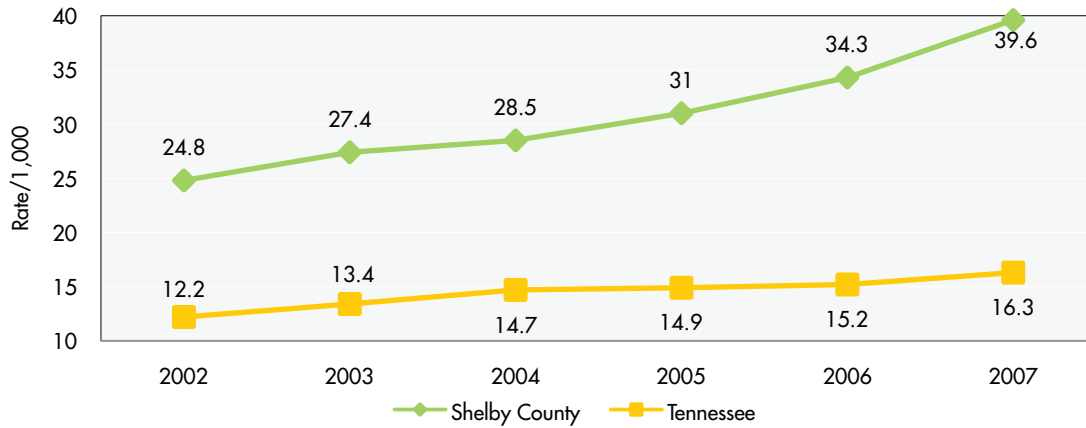
## **High-risk adolescent behavior can have long-term consequences.**

In addition to sexual activity, there are many other high-risk behaviors which place children and teens at risk. These behaviors are often established during childhood or adolescence, and many can have a negative impact on infants and children. This may happen through their effects on pregnancy and birth outcomes, as in the case of alcohol use during pregnancy; it may also occur

through environmental exposure, as in the case of second-hand cigarette smoke.

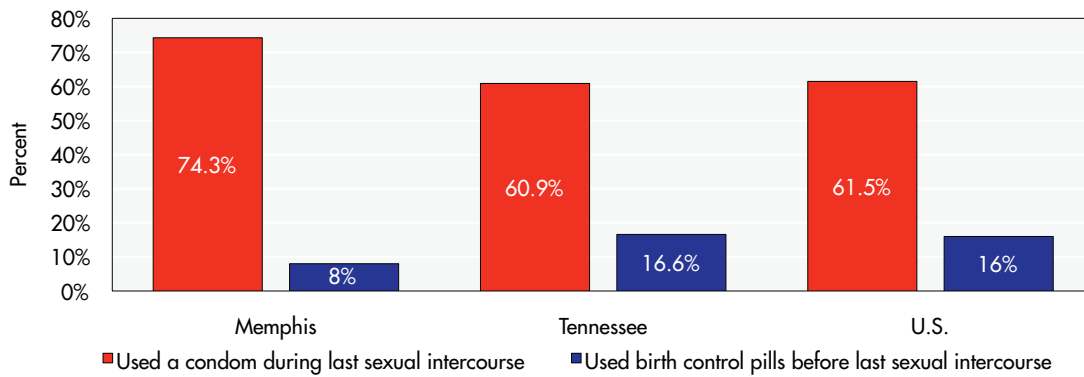
Tobacco use, alcohol use, unhealthy diet, lack of exercise, and obesity are prevalent among youth. In addition to affecting this generation, these high risk behaviors also have the potential to have negative effects on future generations.

**Figure 5: Rate of Chlamydia, Gonorrhea or Syphilis in Ages ten to 19, Shelby County & Tennessee, 2002-2007**



Source: Tennessee Department of Health, Communicable and Environmental Disease Services, STD/HIV/AIDS Branch, 2002-2007 and American Community Survey, 2002-2007, B01001

**Figure 6: Percentage of High School Students Currently Sexually Active by Contraceptive Use, Memphis, Tennessee & United States, 2007**



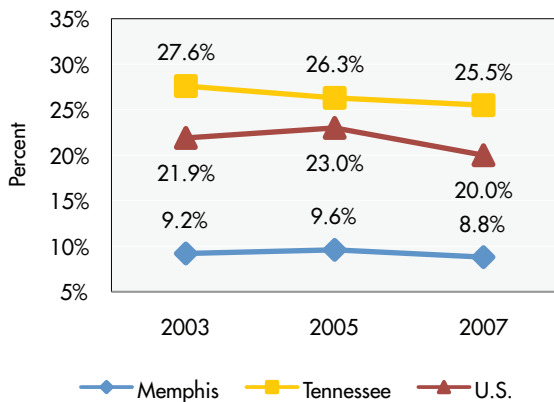
Source: Source: Youth Risk Behavioral Surveillance Survey, 2007, <http://apps.nccd.cdc.gov/yrbss/SelQuestYear.asp?Loc=XX>

## Memphis adolescents continue to be less likely to smoke cigarettes and consume alcohol than adolescents in other parts of the state and nation.

Tobacco use is the most common cause of preventable disease and death in the U.S. (CDC, 2002), and it begins most commonly in adolescence or early adulthood. Nine out of ten adult smokers began smoking before age 21 (Mowery, Brick & Farrelly, 2000). Of people who start smoking as teens approximately one out of three will die prematurely of a smoking-related disease (CDC, 2006). Furthermore, tobacco is considered to be a gateway drug that may lead to alcohol, marijuana and other illegal drug use (U.S. Department of Health and Human Services, 1994).

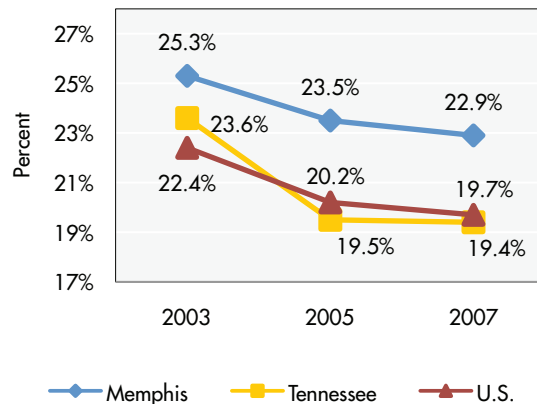
In 2007, 43 percent of Memphis City Schools (MCS) high school students reported having tried cigarettes<sup>2</sup>. While reported cigarette use is lower than reported by students throughout Tennessee and the rate appears to be trending downward, almost one in four MCS students reported current use of marijuana.

**Figure 8: Percentage of High School Students Who Smoked in the Past 30 Days, Memphis, Tennessee & United States, 2003-2007**



Source: Youth Risk Behavioral Surveillance Survey, 2003-2007, <http://apps.nccd.cdc.gov/yrbss>

**Figure 9: Percentage of High School Students Who Have Used Marijuana in the Past 30 Days, Memphis, Tennessee & United States, 2003-2007**



Source: Youth Risk Behavioral Surveillance Survey, 2003-2007, <http://apps.nccd.cdc.gov/yrbss>

<sup>2</sup> Unless otherwise noted, all information on risk behaviors of Memphis students is taken from the Youth Risk Behavior Surveillance System (CDC 2008b).

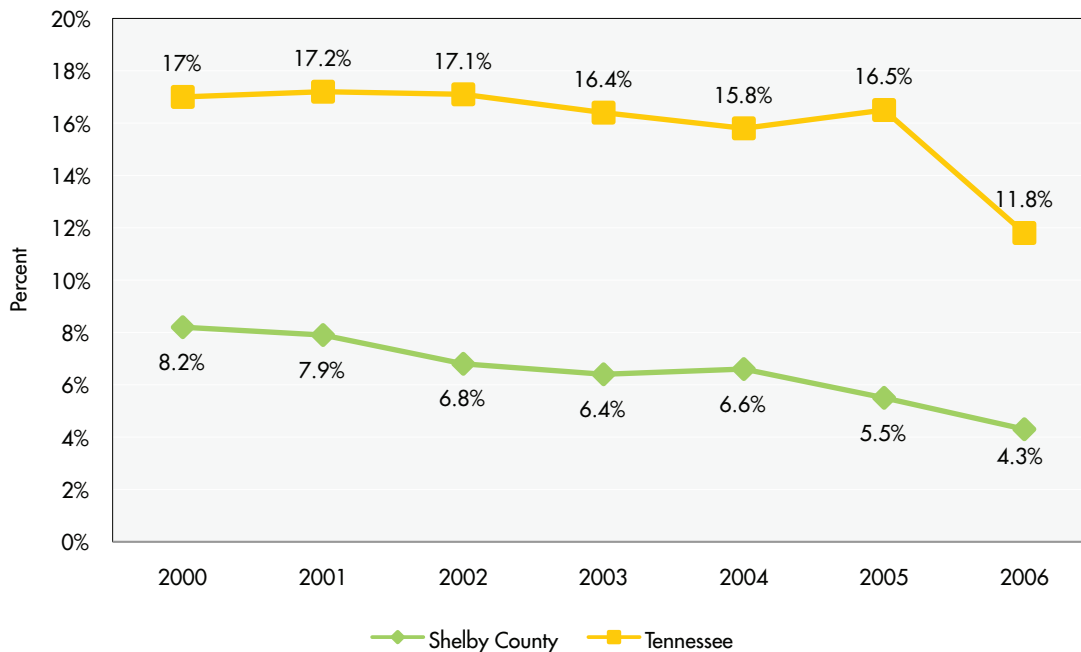
## Smoking can lead to stillbirth or infant death.

A smoking mother has an 11 percent greater chance of stillbirth plus a five percent greater chance of newborn death. Smoking also has a negative impact on younger children. Environmental tobacco smoke, also known as second-hand smoke, has almost 4,000 chemicals in it that infants and children breathe whenever someone smokes around them. Children who breathe second-hand smoke are at risk for many serious health problems, such as ear infections, hearing problems, respiratory infections and asthma (Committee on Environmental Health, 1997).

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 U.S. stopped smoking there would be an 11 percent reduction in stillbirths and a five percent reduction in newborn deaths (March of Dimes, 2009b). Although the rates of women who reported smoking during pregnancy declined significantly between 2000 and 2006, almost one in 20 women in the Memphis community continued to report that she smoked during pregnancy.

**Figure 10: Percentage of Women Who Reported Smoking During Pregnancy, Shelby County & Tennessee, 2000-2006**



Source: Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2000-2006

## Adolescent alcohol use quadruples the risk of alcohol dependence.

According to recent research, 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 (National Institute on Alcohol Abuse and Alcoholism, 2004/2005).

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.”

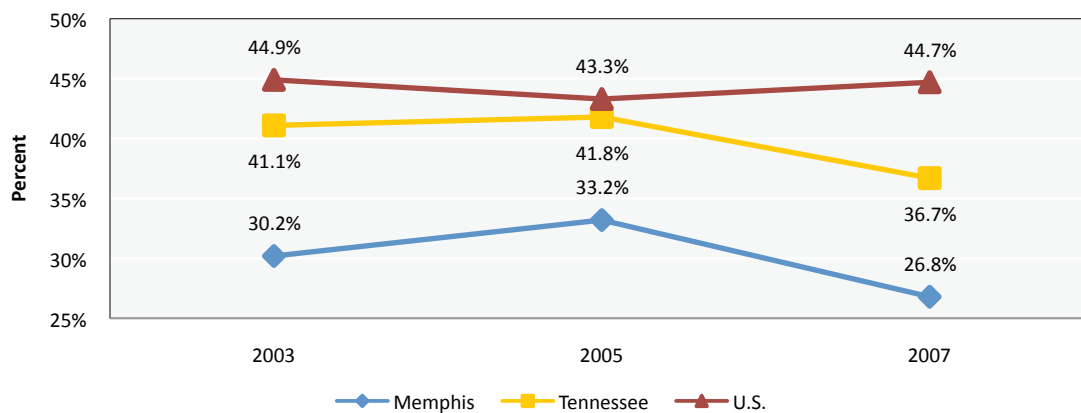
There is mounting evidence that repeated exposure to alcohol during adolescence leads to long-lasting deficits in cognitive abilities, including learning and memory.

Alcohol use negatively affects school performance and is related to high risk sexual behaviors, depression, suicide and other drug use.

Adolescent alcohol use is also 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 adolescent and college students nationally.

Females who use alcohol while pregnant increase their risk of having complications during pregnancy as well as giving birth to an infant with fetal alcohol syndrome, the most common preventable cause of mental retardation. In 2006 the estimated use of alcohol (had a drink in the last 30 days) in women of childbearing years living in Tennessee was 31 percent, and estimated binge drinking (had four or more drinks on any one occasion in past 30 days) was nine percent (CDC, 2008a).

**Figure 11: Percentage of High School Students Who Drank in the Past 30 Days, Memphis, Tennessee & United States, 2003-2007**



Source: Youth Risk Behavioral Surveillance Survey, 2003-2007,  
<http://apps.nccd.cdc.gov/yrbss>

## Obesity is an epidemic locally and statewide.

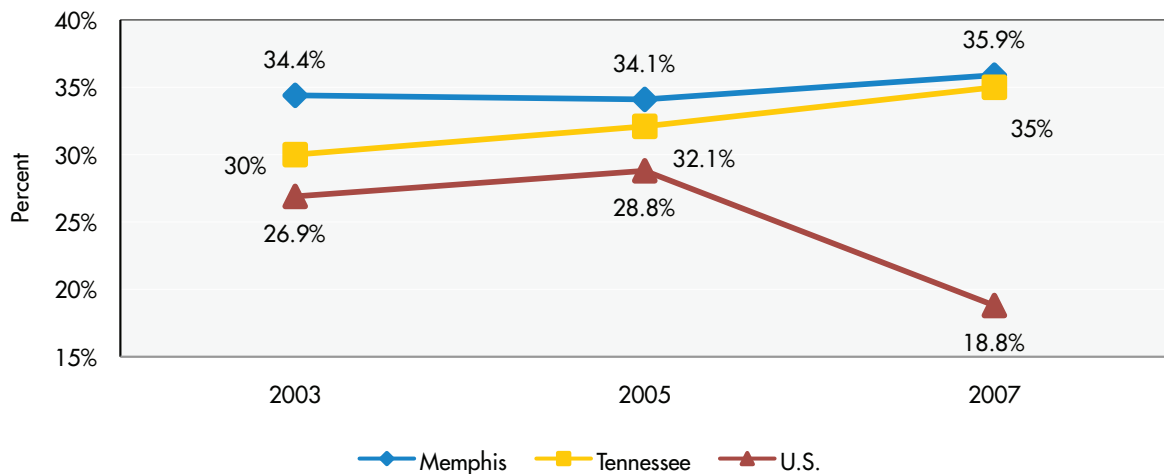
A Tennessee Comptroller's Report states that Tennessee has "epidemic proportions of childhood obesity, one of the highest rates of pediatric obesity and childhood type II diabetes, and one of the highest rates of heart disease in the United States" (TN, 2006, p. i).

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 (Freedman *et al.*, 2001; Power *et al.*, 1997).

Almost 20 percent of MCS high school students have a body mass index (BMI) in the "at risk for overweight" category and 16 percent are "overweight." These percentages are consistent with the State of Tennessee (18 percent and 17 percent, respectively) but significantly higher than the national percentages (16 percent and 13 percent, respectively.)

Figure 12: Percentage of High School Students Who Were Overweight or Obese, Memphis, Tennessee & United States, 2003 - 2007



Source: Youth Risk Behavioral Surveillance Survey, 2003-2007,  
<http://apps.nccd.cdc.gov/yrbss>

## Obesity has negative effects on pregnancy and birth outcomes.

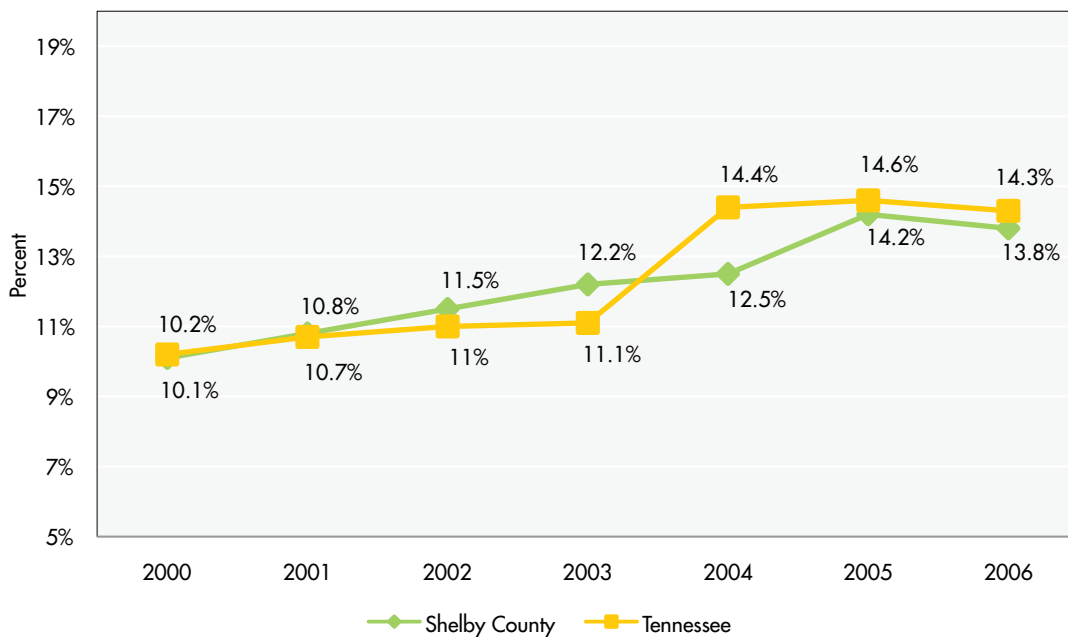
Research has shown that obesity increases the risk of adverse outcomes for both mother and baby, such as birth defects (especially neural tube defects), infertility, labor and delivery complications, fetal and neonatal death, hypertension, gestational diabetes and pre-eclampsia, and large-for-gestational-age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

The dramatically increasing rates of obesity and pre-term births have led to recent attempts to find a link between the two. Findings suggest that while obesity may not be a direct cause of pre-term birth, it does increase rates of medical complications, such as hypertension and diabetes, that have been shown to contribute to pre-term birth (March of Dimes, 2005).

All women should gain weight during pregnancy (the amount depends on pre-pregnancy weight), but excessive weight gain can be harmful to both mother and infant, and may be difficult to lose after delivery. Too much weight gain can cause backache, orthopedic problems, increased varicose veins and fatigue. It may result in a LGA baby, increasing the risk of a cesarean birth and problems in the infant, such as birth trauma or low blood sugar.

The percentage of women in Memphis and state-wide reporting pregnancy weight gain of more than 50 pounds (excessive at any pre-pregnancy weight) has risen significantly since the year 2000.

**Figure 13: Percentage of Women Gaining 50 lbs. or More During Pregnancy, Shelby County & Tennessee, 2000-2006**



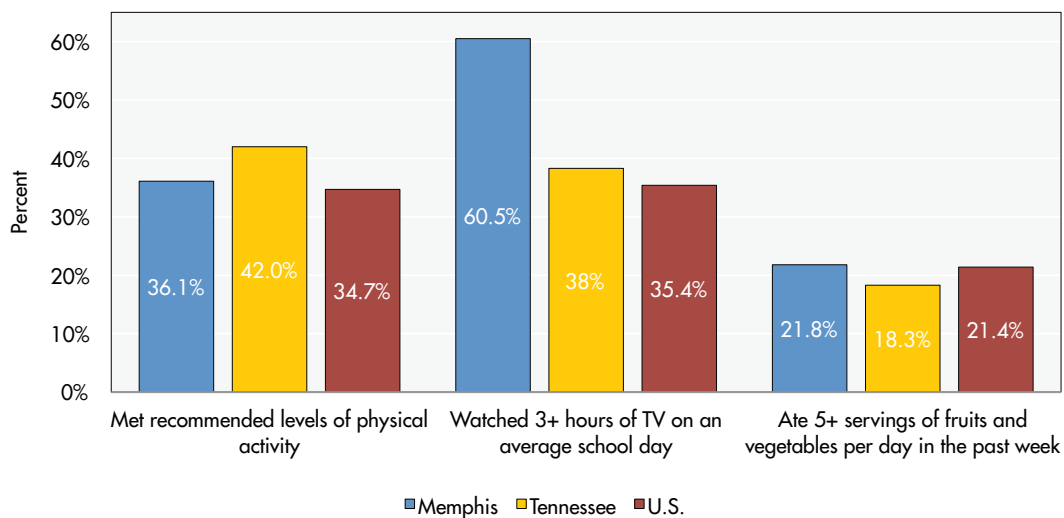
Source: Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics, Birth Certificate Data, 2000-2006

## Poor nutrition, sedentary behaviors, and lack of physical activity among Memphis youth contribute to the obesity epidemic.

In 2007, only 36 percent of MCS high school students and 42 percent of students across the state reported adequate levels of physical activ-

ity. Although both Memphis and Tennessee saw an increase of almost ten percentage points from 2005 to 2007, the numbers remain far too low.

**Figure 14: Percentage of High School Students by Diet and Exercise, Memphis, Tennessee & United States, 2007**



Source: Source: Youth Risk Behavioral Surveillance Survey, 2007, <http://apps.nccd.cdc.gov/yrbss/SelfHealthTopic.asp>



## Physical activity can help prevent or manage childhood obesity and its effects.

Exercise has been shown to promote fat loss and improve 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 (Parizkova, Maffei & Poskitt, 2002; U.S. Department of Health and Human Services, 1996).

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 (Koplan, Liverman & Kraak, 2005). These behaviors may cause the differences reported by Memphis students as compared to students across the state (see Figure 14).

About one in five students locally and statewide 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. In addition, eating fruit and vegetables can increase fiber intake, reduce fat intake and help to maintain a healthy weight (U.S. Department of Health and Human Services and U.S. Department of Agriculture, 2005).

Nutrition is especially important for young women. Some fruits and vegetables are also good sources of folate (*e.g.*, green leafy vegetables and oranges), and 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, 2009a).

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## Data

Chart data can be downloaded at <http://theurbanchildinstitute.org/databook>