

# 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.

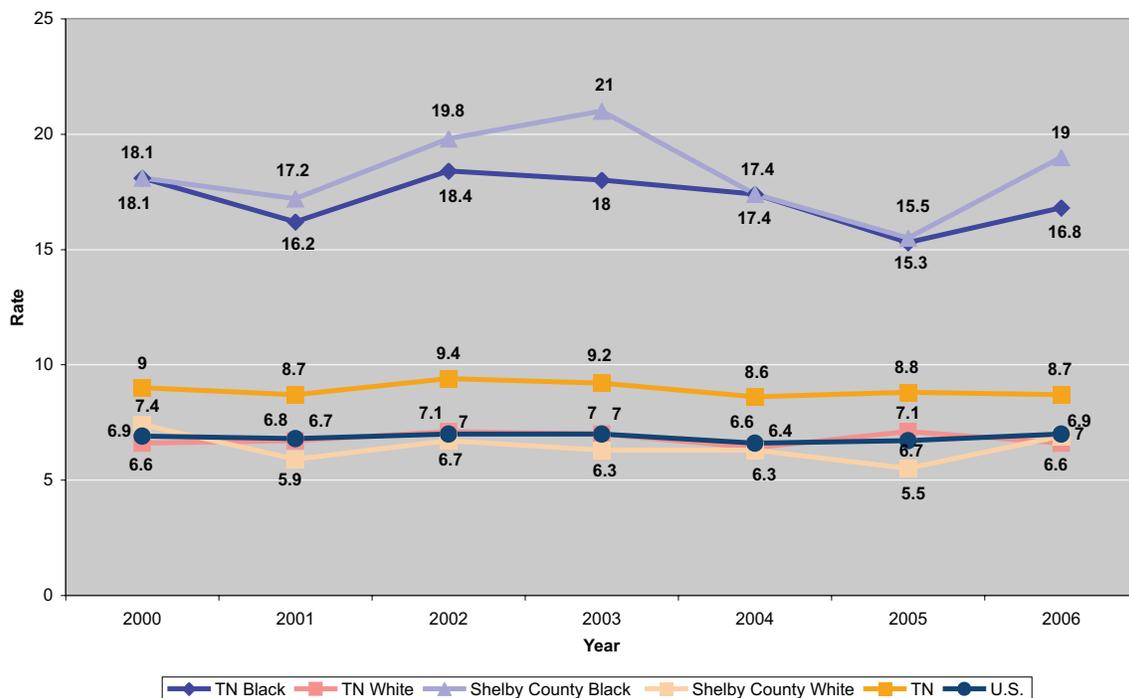
Infants who die within the first month of life are usually those who are born very prematurely or with serious congenital anomalies, particularly of the cardiovascular system and/or respiratory tract. Infant deaths after one month and before 12 months are most frequently a result of Sudden Infant Death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

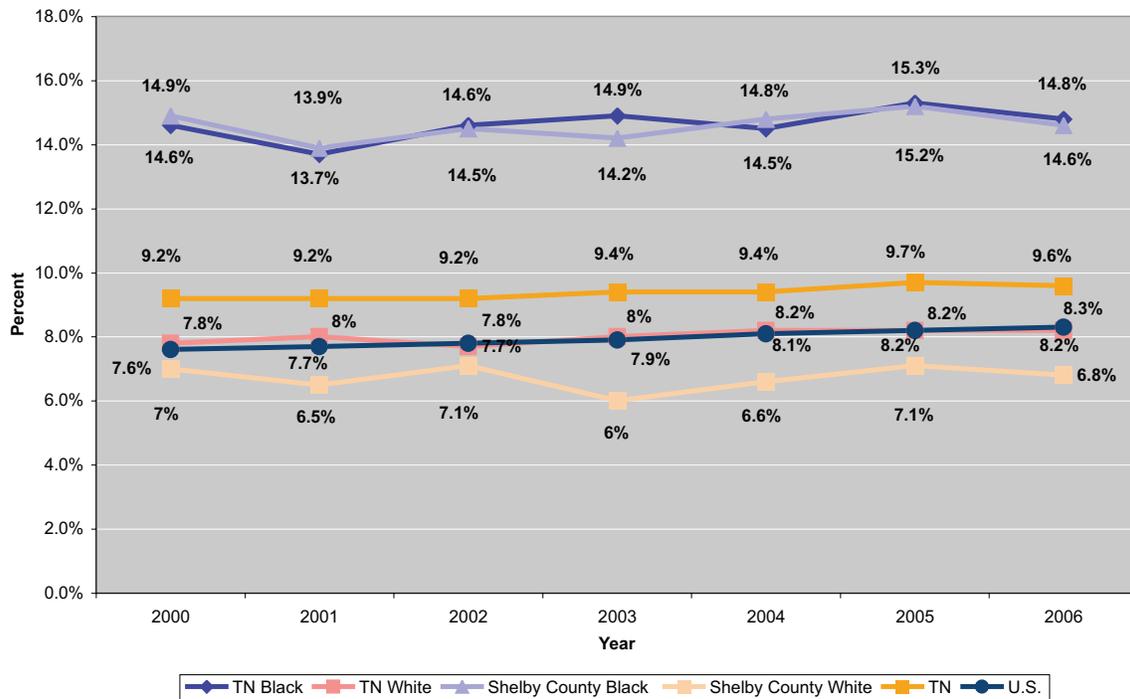
The earlier during gestation that an infant is born the greater the risk of death. Two out of three infants who die in the first year of life are born at less than 37 weeks gestation and are considered *premature*. While low birth-weight does not correlate exactly with gestational age, it frequently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

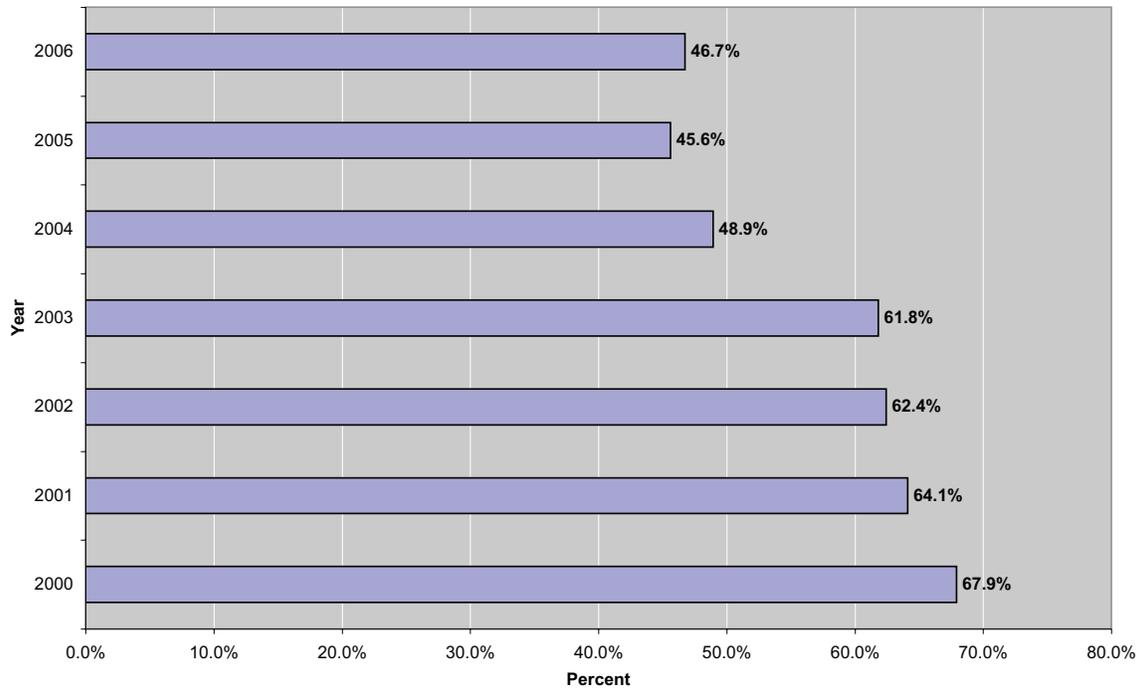
Black mothers are more than twice as likely to have premature babies than white mothers.

### 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



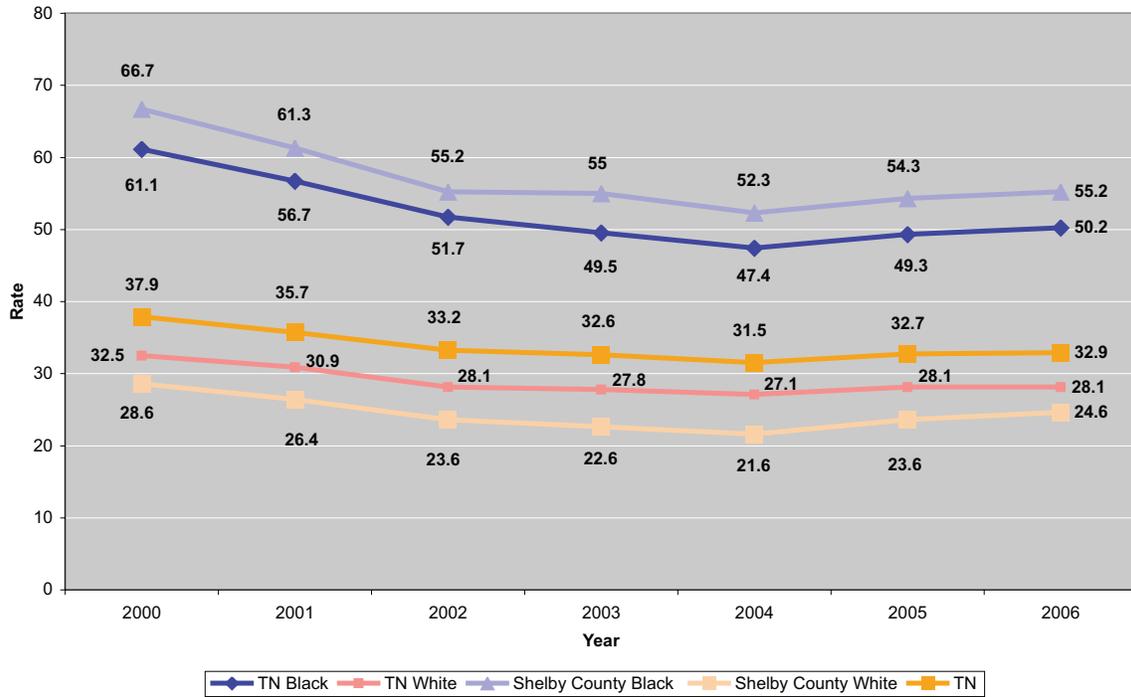
Source: Annie E. Casey Foundation, CLIKS Online, 2000-2006

### 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

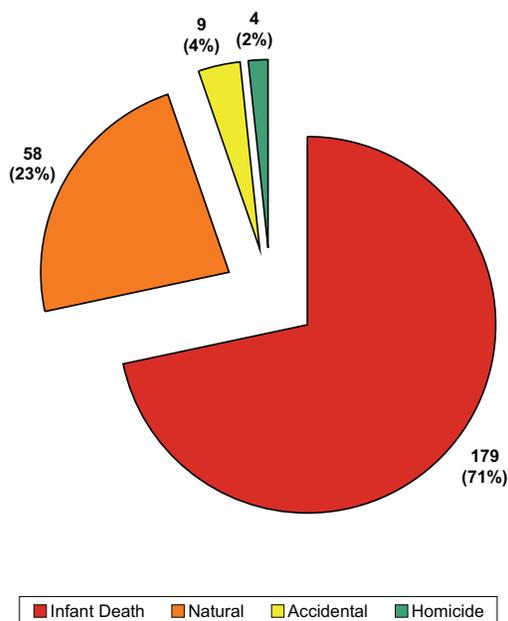
to recognize the problems faced by teenage mothers. It is unclear, though, what has contributed the most to cause the decline. (Institute of Medicine. *Preterm Births. Causes, Consequences, and Prevention*. Behrman RE and Butler AS eds. 2006; March of Dimes Peristats. [MarchofDimes.com/peristats/](http://MarchofDimes.com/peristats/);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

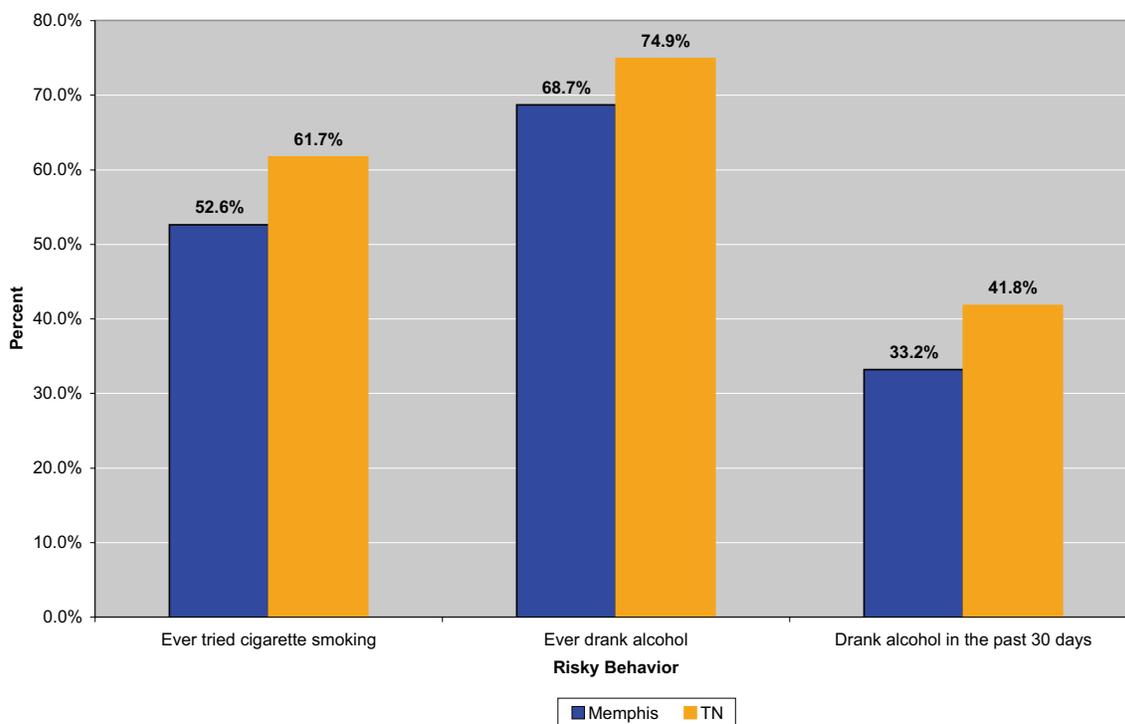
Likewise, unhealthy diet, lack of physical activity and tobacco use, all of which are strongly linked to cardiovascular disease and cancer, are also prevalent among youth. In addition to affecting this generation, these high risk behaviors also have the potential to have negative effects on future generations.

## 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

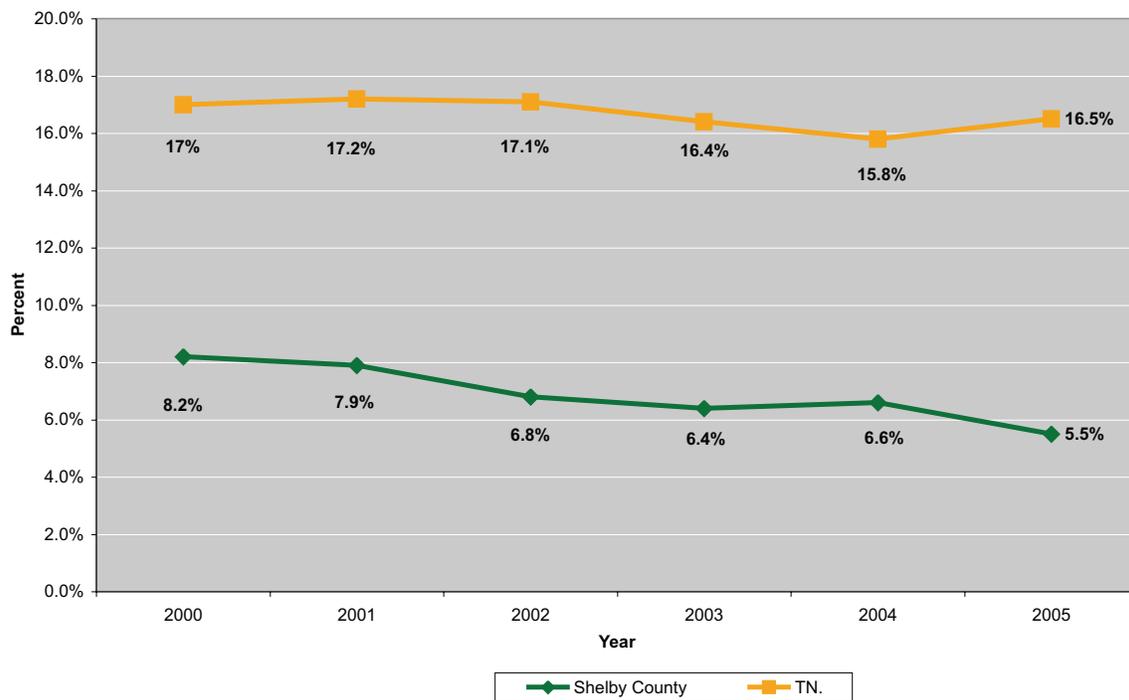
Smoking also has a negative impact on younger children. Environmental Tobacco Smoke (ETS), also known as second-hand smoke, contains 4,000 chemicals that infants and children breathe whenever someone smokes around them. Children who breathe ETS are at risk for many serious health problems, such as ear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



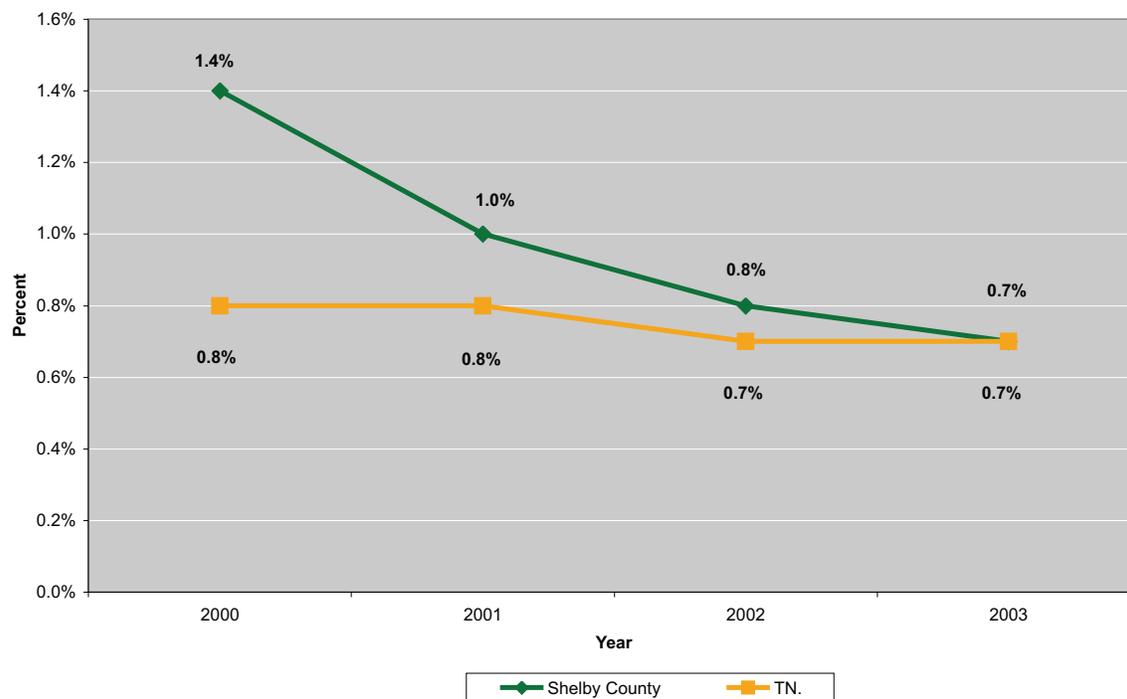
Source: Tennessee Department of Health, Birth Certificate Data, 2000-2005

## 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

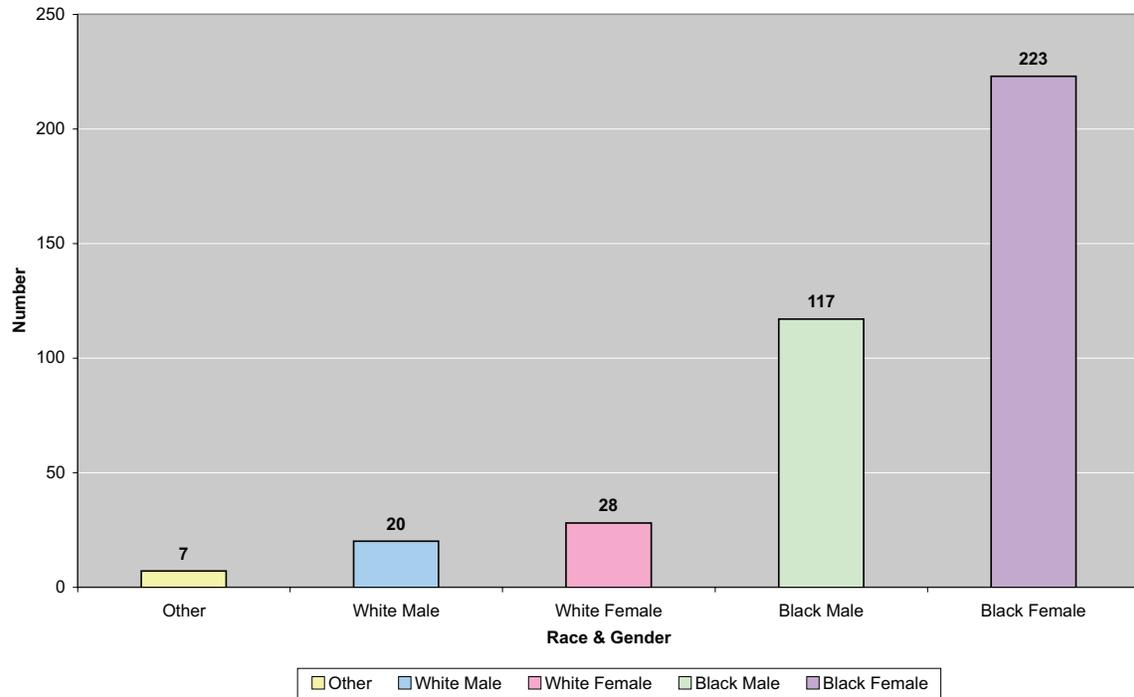
### Poor nutrition and lack of physical activity contribute to obesity and diabetes.

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

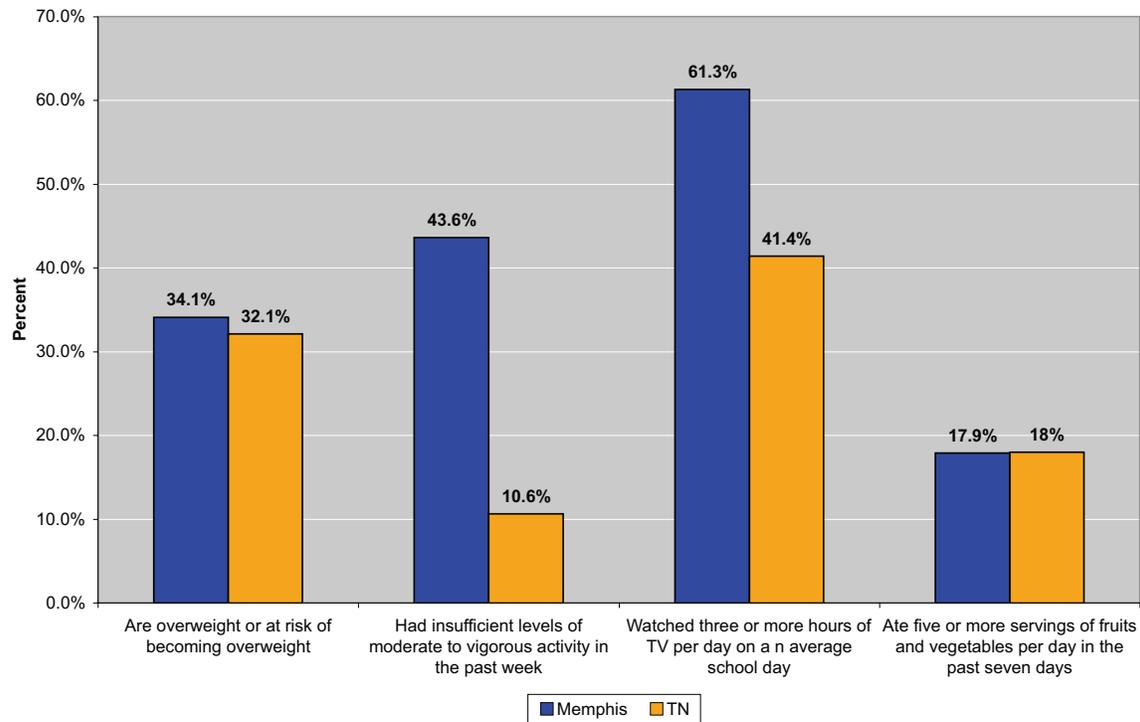


Source: University of Tennessee Health Science Center Le Bonheur Children's Medical Center, Stender, Christensen, Burghen, et al.

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))

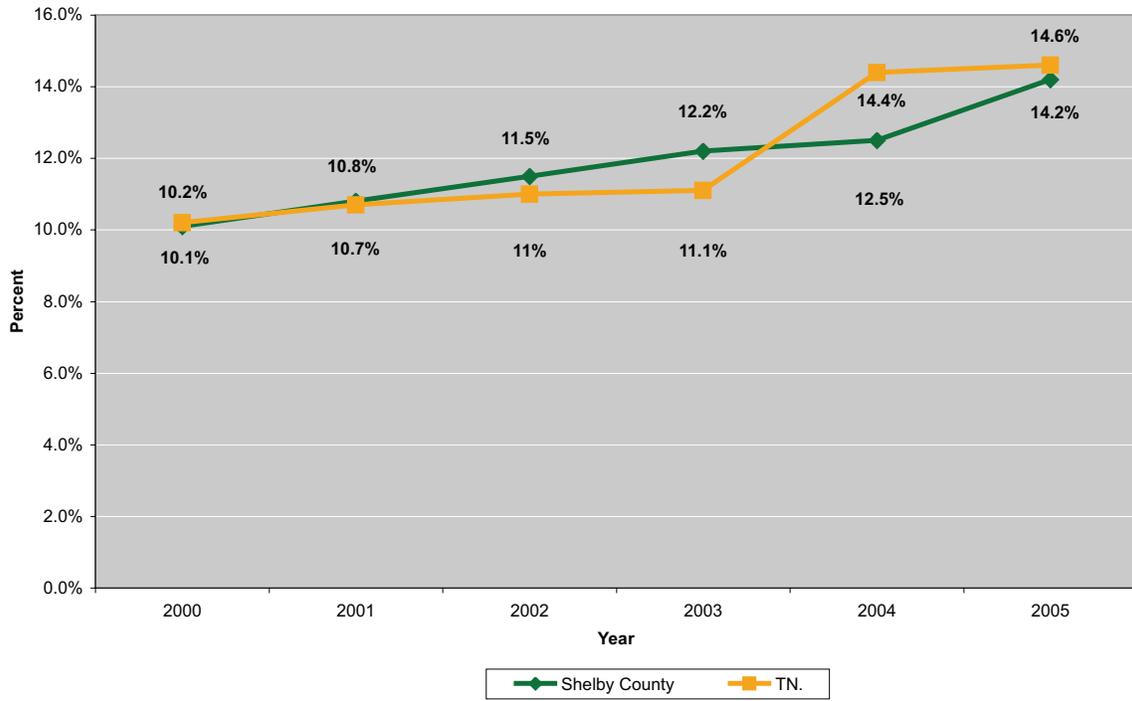
In addition, eating fruit and vegetables can help achieve other dietary goals including increasing fiber intake, reducing fat intake and helping to maintain a healthy weight. (*Dietary Guidelines for Americans, 2005*)

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



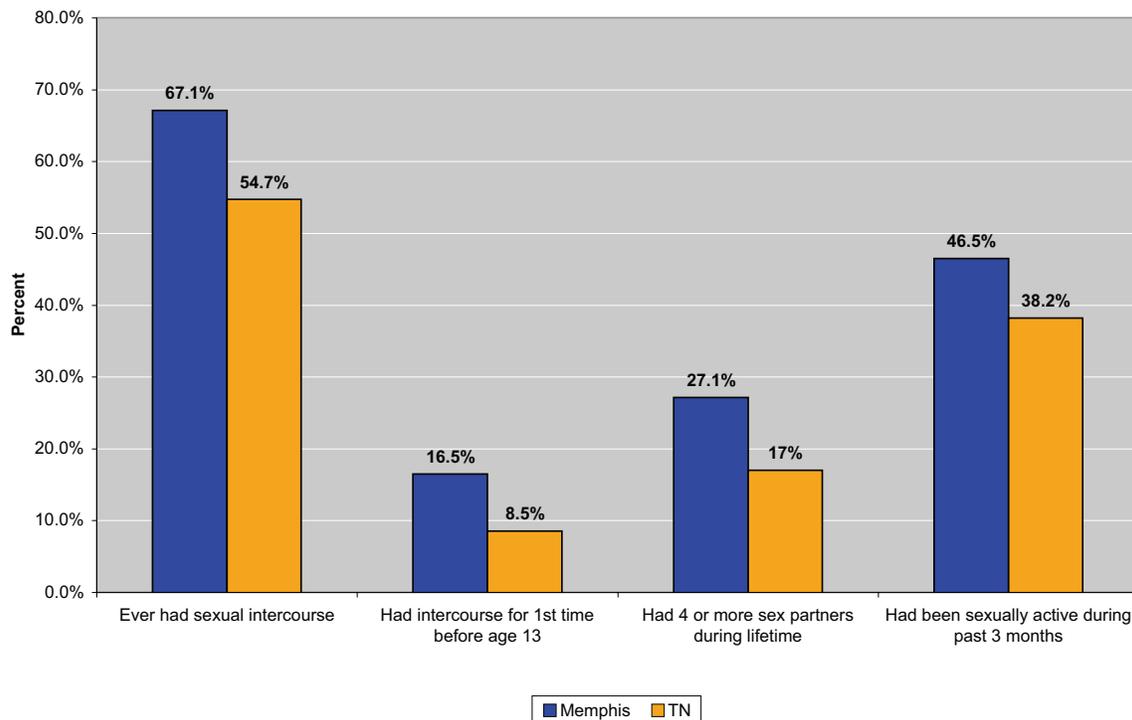
Source: Tennessee Department of Health, Birth Certificate Data 2000-2005

## 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**



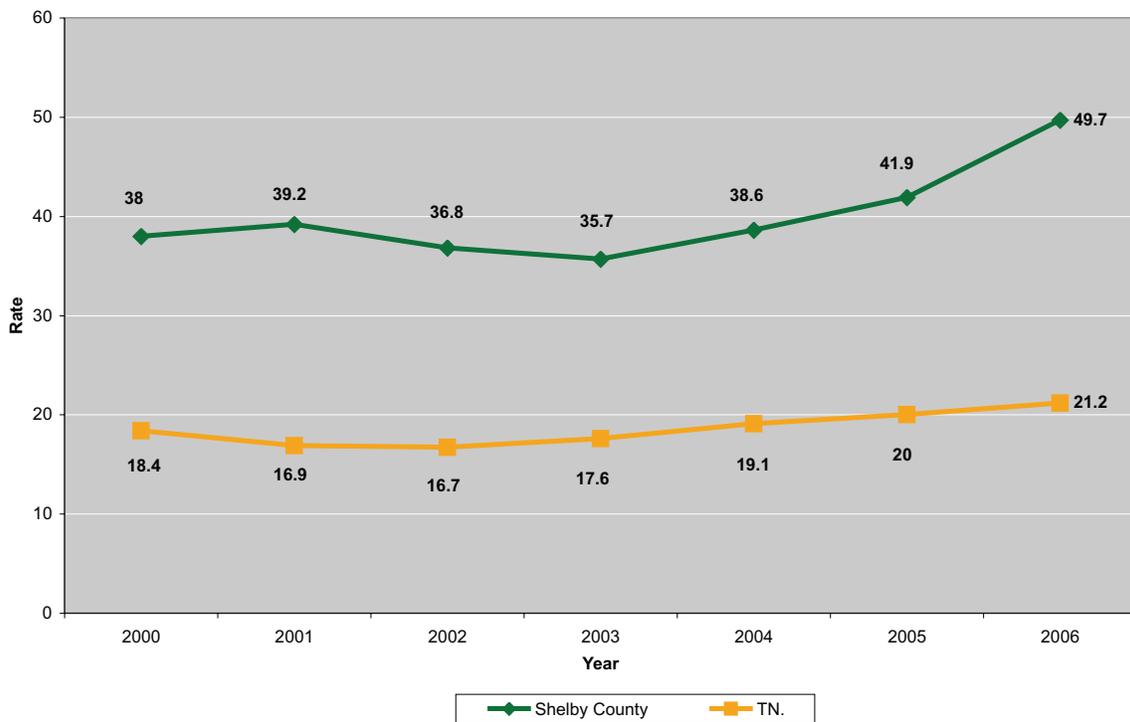
Source: Youth Behavioral Risk Surveillance Survey, 2005

## 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



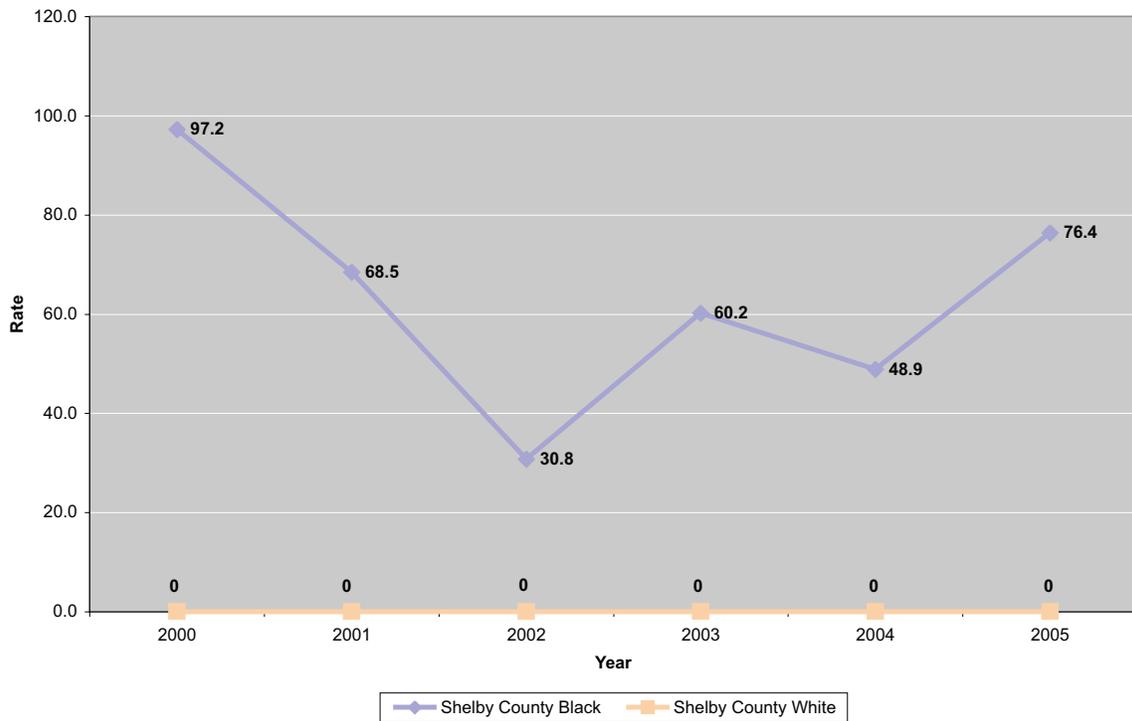
Source: Annie E. Casey Foundation, CLIKS Online, 2000-2006

## 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