

The background of the cover features two silhouettes against a light blue gradient. On the left, a young woman is shown in profile, wearing roller skates and holding a pair of roller skis. On the right, a young man is shown from the waist up, wearing a headset and holding a video game controller. The overall theme suggests modern adolescent activities.

# America's Adolescents: Are They Healthy?

**2003 Edition  
Revised and Updated**

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M. Jane Park  
Tina Paul  
Claire D. Brindis  
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National Adolescent Health Information Center  
Division of Adolescent Medicine,  
Department of Pediatrics and  
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## **National Adolescent Health Information Center**

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The National Adolescent Health Information Center (NAHIC) of the University of California, San Francisco (UCSF) is funded through a Cooperative Agreement with the Maternal and Child Health Bureau. Established in October, 1993, it is located within the UCSF School of Medicine where it is operated jointly by the Division of Adolescent Medicine, Department of Pediatrics and the Institute for Health Policy Studies. NAHIC's goal is to improve the health of adolescents by serving as a national resource for adolescent health information and research to assure the integration, synthesis, coordination and dissemination of adolescent health-related information. Major activities include: 1) promoting collaborative relationships with the Maternal and Child Health Bureau, other federal and state agencies, professional and research organizations, private foundations and advocacy groups; 2) collecting, analyzing and disseminating information through short-term and long-term analyses of new policies affecting the adolescent population; and 3) providing technical assistance, consultation and continuing education to states, communities, and providers in content areas that emphasize the needs of adolescents. Throughout its activities, NAHIC emphasizes the needs of special populations who are more adversely affected by the current changes in the social environment for youth and their families.



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## Executive Summary

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Adolescence represents a unique period in the life cycle, bringing with it special challenges and opportunities. No longer children and not yet adults, adolescents make significant choices about their health, and develop attitudes and health practices that continue into adulthood. Adolescents face choices in areas including driving habits, substance use, sexuality, physical exercise, and diet. Risky behavior in these areas contributes to the leading causes of adult morbidity and mortality. Thus, fostering healthy adolescent development and behavioral choices has the potential to improve the health of adults as well as adolescents. This monograph presents an overview of the health status of American adolescents.

### Demographic Trends

- *The adolescent population is growing in size, but is projected to decrease slowly as a percentage of the total population.*
- *The adolescent population continues to become more racially and ethnically diverse than the overall U.S. population, with Hispanic and Asian populations increasing as a percentage of 10-19 year-olds.*
- *The racial/ethnic composition of the population ages 10-19 varies tremendously by region. While the South is currently home to the greatest number of adolescents, the West is projected to experience the greatest growth.*
- *About 15% of adolescents live in poverty. A growing minority of adolescents live in single-parent families. Family structure varies significantly by race/ethnicity, with non-Hispanic Black children most likely to live in single-parent households.*

### The Health Care System

- *Adolescents generally rely on ambulatory care, especially physician offices and HMOs, for medical treatment. Pregnancy-related diagnoses are the most common reason for hospitalization, followed by injury and mental health diagnoses.*
- *Most adolescents have access to a usual source of care. However, a significant minority—including the uninsured, the poor, some racial/ethnic groups, and adolescents with certain risk factors—report having foregone needed care and having unmet health needs. Having health insurance plays a significant role in access to care.*
- *Special populations of adolescents, including those with chronic health conditions, physical disabilities, activity limitations and mental health disorders, require a special constellation of services. These adolescents often face extra barriers to care.*

## Health Status

- *After peaking in the early 1990s, mortality rates have fallen to (or are near) record lows for all adolescents. However, significant disparities persist in mortality rates. Male adolescents continue to die at more than twice the rate of female adolescents, and American Indian and Black males continue to die at the highest rates.*
- *Overall trends in unintentional injuries are promising. Driven by a decrease in fatal motor vehicle accidents, unintentional injury mortality rates have fallen over the past two decades, although American Indian/Alaskan Native young males continue to die at the highest rates. Fewer adolescents report driving drunk or riding with a driver who has been drinking, and more adolescents are wearing seatbelts. Males are more likely to engage in most of these risky behaviors.*
- *Overall, the prevalence of violence in adolescents' lives decreased in the last decade. In addition to a dramatic decline in homicide rates, adolescents are fighting less, are perpetrating fewer violent crimes, and are less likely to carry weapons. A continuing concern, however, is the extent to which violence disproportionately affects the lives of young Black males.*
- *Adolescent suicide rates have remained stable over the past two decades, with American Indian/Alaskan Native males consistently committing suicide at rates much higher than other adolescents. While adolescent males overall are more likely to commit suicide, females are more likely to attempt suicide and report suicide-related ideation. There are few national data on adolescent mental health status.*
- *Use of tobacco, alcohol, and illicit drugs has decreased from the peaks of the late 1970s and early 1980s. Use of these substances increased somewhat after 1992 and has decreased or stabilized since 1997. Black youths generally report the lowest levels of substance use. Rates of heavy substance use are a continuing concern: among 12th graders, almost 30% have engaged in binge drinking in the past two weeks, about 17% smoke cigarettes daily, almost 10% smoke a half-pack or more daily, and 6% use marijuana daily.*
- *Overall reproductive health trends over the past decade are positive. Young people are delaying sexual activity and those who are sexually active are more likely to use condoms. The past decade has witnessed a dramatic decline in adolescent pregnancy, birth, and abortion rates. In addition, the prevalence of most sexually transmitted infections (STIs) has decreased. Trends that warrant continued concern include the wide prevalence of chlamydia, the relatively modest decline in pregnancy rates among Hispanic adolescents, and the continuing high rate of STIs among young Black women.*
- *There has been a substantial increase in adolescent obesity—a trend experienced by both males and females and by all racial/ethnic groups over the past 25 years.*

Trends in risky behavior among adolescents, both promising and troubling, dominate our discussion of adolescent health. Although this monograph examines these behaviors separately, they are interrelated and often have similar antecedents. To improve adolescent health, we need to complement the focus on individual behavior with approaches that promote healthy youth development and create supportive environments that encourage healthy choices. Adopting these approaches requires the involvement of the many individuals and institutions that affect the lives of adolescents.

# I.

## INTRODUCTION AND BACKGROUND

Adolescence represents a unique period in the life cycle, bringing with it special challenges and opportunities. No longer children and not yet adults, adolescents make significant choices about their health and develop health-related attitudes and practices that continue into adulthood. Most adolescents are considered healthy when assessed by traditional medical markers, such as mortality rates, incidence of disease, prevalence of chronic conditions, and health care utilization. However, adolescents do face significant health problems, many of which are attributable to risky behavior (Ozer, Macdonald & Irwin, 2002). These behaviors, which are often interrelated and preventable, affect not only adolescent health, but also contribute to the leading causes of adult morbidity and mortality (Grunbaum et al., 2002). The following categories of risky behavior—which often begin in adolescence—are related to the leading causes of adult mortality and morbidity: injury-related behavior, violence, tobacco use, drug and alcohol use, unsafe sexual activity, inadequate physical activity, and poor dietary habits (Kann et al., 2000). Thus, efforts to improve adolescent health require a focus on social and behavioral issues. In addition to reducing risky behaviors among individuals, improving adolescent health implies a focus on healthy development and the creation of environments that support healthy choices (Mortimer & Larson, 2002). Such efforts have the potential to improve health for adults as well.

This monograph is the third version and update of *America's Adolescents: Are They Healthy?*, first published in 1997. It presents an overview of the health status of adolescents, covering a range of topics including: demographics, mortality, morbidity and risky behaviors, and health care utilization and access. In describing adolescent health status, we highlight differences by gender and race/ethnicity. The document aims to inform programs and policies to improve the health of adolescents and the environments which shape adolescents' lives. The data presented here are the most current national data that we were able to identify as of January 2003.

### MONITORING ADOLESCENT HEALTH: THE NATURE OF AVAILABLE DATA

This monograph focuses primarily on adolescent health problems, particularly risky behaviors—a focus that reflects the relative abundance of national data on risky behaviors. The importance of risky behaviors in adolescent health is underscored by the *Healthy People 2010* Initiative, which has an adolescent-specific component (*The National Initiative to Improve Adolescent Health by the Year 2010*). This component has identified 21 Critical Objectives for adolescents and young adults among the 108 *Healthy People 2010* Objectives that address adolescents and young adults. Of these 21 objectives, 10 address specific risky behaviors and many of the remaining 11 are outcomes directly linked to such behaviors (see Appendix B).

This document draws on many data sources, each with its own strengths and limitations. Appendix A provides an overview of the major data sources for adolescent health. In this section we highlight the limitations of data sources that often impede efforts to assess adolescent health accurately. For example, adolescents are often not considered as a separate group. In many reports using national surveys, particularly those measuring access to and utilization of health care services, respondents are classified into age groups of children (under age 15 or 18), young adults (e.g., 15 to 24), and older adults (e.g., 25 to 44). Thus, trends pertaining to adolescents often cannot be separated from those pertaining to children or young adults. In surveys that do classify adolescents separately, there is inconsistency in the age ranges used to define adolescence. These inconsistencies make comparisons of different data sources difficult. For this reason, throughout this report, we will identify the age groups of reference.

The most meaningful data sources currently available are those that separate adolescence into two periods: 1) early adolescence, ages 10 to 14; and 2) late adolescence, ages 15 to 19. In addition, some sources separately analyze subgroups within those age groups, for example, seniors in high school or 17- and 18-year-olds. Such data sources provide a more accurate view of the adolescent period since they recognize the vast developmental differences between younger and older adolescents (Irwin, Burg & Cart, 2002; Grantmakers in Health, 2002).

Racial/ethnic categories may group together subpopulations which differ dramatically with regard to socio-economic status, acculturation and other factors. For example, the category “Hispanic” often includes people of Cuban, Puerto Rican, and Mexican origin as well as other people of Hispanic origin. These groupings may mask significant sub-group health disparities.<sup>1</sup> Often these groupings have been created because sample sizes of some groups are too small for meaningful analyses. Small sample sizes make it particularly difficult to assess trends for American Indian/Alaskan Native (AI/AN) adolescents. Health indicators for AI/AN youth, who comprise 1% of the adolescent population, often fluctuate widely from year to year because small changes in numbers affect rates more dramatically. For racial/ethnic data in this monograph, the category names presented are those of the data sources used. Finally, it is worth noting that few survey data sources separately assess ethnicity and socioeconomic status (SES), which can lead to the use of race as a “proxy” for socioeconomic status.

Other limitations of adolescent health data also exist. First, few surveys obtain information about the types of health services sought by and provided to adolescents, and the perceived outcomes of these services. Second, most health surveys are cross-sectional, making it difficult to track trends in health status over time. Third, due to limitations in the questions asked about adolescents with chronic illness, the accuracy of the estimated number of adolescents suffering from chronic conditions and acute disability remains uncertain (FIFCFS, 2002). In addition, national data about other special groups of adolescents, such as youth in foster care, incarcerated youth and migrant youth are lacking (Knopf et al., 2003). There are few national data on prevalence of mental health disorders among children and adolescents (DHHS, 1999), although there has been progress in creating tools to measure mental health status (Shaffer et al., 1996, as cited in DHHS, 1999; Lahey et al., 1996). Finally, some surveys, particularly those measuring utilization of health care services, rely on parental reporting. Parents may not be aware of all of the care needed, services sought, or diagnoses received by their adolescents, thus limiting the validity of these data.

Some of the most useful current data on adolescents, especially in regard to risky behaviors, comes from studies that specifically target the adolescent age group. These include the Youth Risk Behavior Surveillance System (YRBSS), conducted by the Centers for Disease Control and Prevention, and the Monitoring the Future Study (MTF), conducted by the Institute for Social Research at the University of Michigan and supported by the National Institute on Drug Abuse. The Youth Risk Behavior Surveillance System includes national samples of high school students in grades 9 to 12. The Monitoring the Future Study has been studying trends in smoking, alcohol, and drug use among students since 1975. As noted in Appendix A (Data Sources for Adolescent Health), these studies use school-based samples, thus limiting their generalizability to school-attending teens. In addition, there are other ongoing surveillance systems and studies that track health trends across a variety of age groups. Although the target population is broader, they too provide important information on adolescent health. This report relies extensively on the results of MTF, YRBSS, and other data sources, which are described in Appendix A. Throughout this document, when presenting citations for data, we also include the year of data collection and the surveillance system used. For example, the citation: “YRBSS, 2001 – Grunbaum et al., 2002,” indicates that the data comes from the YRBSS survey conducted in 2001.

## **BEYOND RISKY BEHAVIOR: MEASURING ASSETS AND ENVIRONMENTS**

Finally, it is worth noting the lack of national data on young people’s assets and the environment shaping young people’s health-related decisions. An assessment of adolescent health and well-being would ideally include a profile of young people’s assets, such as positive outlook and pro-social behavior, as well as their risky behavior. In addition, our understanding of trends in adolescent risk-taking would be enhanced by data on the contexts—such as family, school and community environments—in which adolescents make health-related decisions. The last decade has seen significant progress both in measuring these concepts and in linking assets and contexts to adolescent risky behaviors. For example, the National Longitudinal Study of Adolescent Health (“AddHealth”) has increased our knowledge of the individual assets (e.g., self-esteem, decision-making competency) and environmental factors (e.g., connections to family and school) associated with healthy decision-making. Furthermore, an analysis of AddHealth data suggests that individual factors and contextual variables are stronger predictors of risky behaviors than demographic variables such as race/ethnicity and income (Blum, Beuhring & Rinehart, 2000). At least one international study, involving 28 countries, has examined the influences of individual assets and contexts on adolescent health (Currie, Hurrelmann, Settertobulte, Smith & Todd, 2000). Other promising efforts to measure development are underway, with the potential to broaden our understanding of and ability to monitor the health and well-being of adolescents (Chapin Hall Center for Children, 2001; Child Trends, 2001; Grunbaum, personal communication, May 2002). Currently, however, there are no ongoing national surveys and few state surveys comparable to those that monitor risky behaviors and more traditional markers of health. Because nationwide measures are not available, nearly all of the health indicators presented here focus on the prevalence of health problems and risky behaviors, comparing indicators among demographically defined groups.

<sup>1</sup>. For example, rates of child poverty among Hispanics range from 16% for children of Cuban origin to 44% for children of Puerto Rican origin (Brindis, Driscoll, Biggs & Valderrama, 2002).

# II.

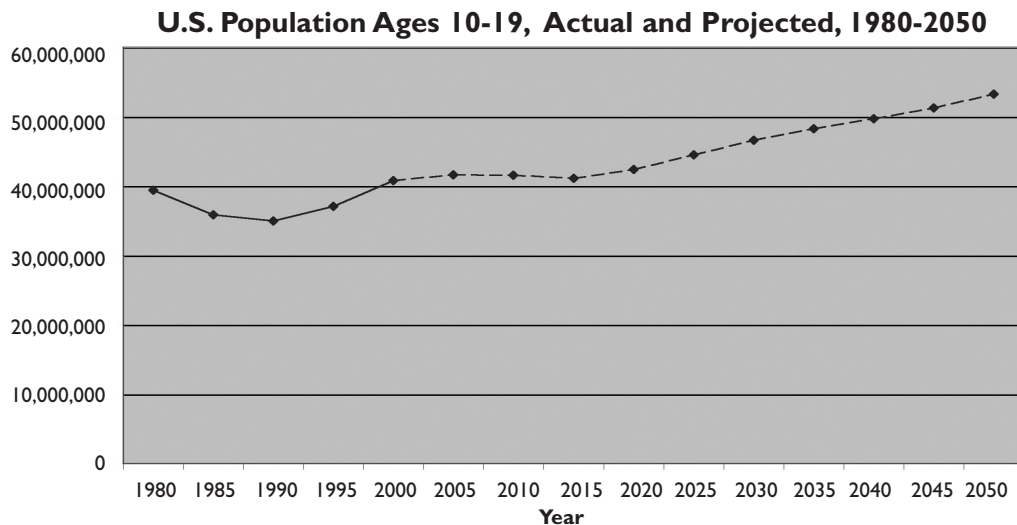
## DEMOGRAPHIC FEATURES OF THE ADOLESCENT POPULATION

### A. SIZE OF THE ADOLESCENT POPULATION

*The adolescent population is growing in size, but is projected to decrease slowly as a percentage of the total population.*

The adolescent population has experienced significant changes over the last few decades, including changes in size, family structure, and racial/ethnic composition. After a steady decline in the size of the adolescent population since the mid-1970s, the number of adolescents in the U.S. began to increase in the 1990s. From 1990 to 2000, the adolescent population ages 10-19 in the U.S. increased by 16.6%, from 34.9 million to 40.7 million (U.S. Census Bureau, 1992; U.S. Census Bureau, 2002a; U.S. Census Bureau, 2002a). This figure is expected to increase to 41.6 million in 2010 and 42.4 million in 2020 (U.S. Census Bureau, 2000a) (Figure 1). Although these projected figures indicate substantial growth for the adolescent population, they represent a much smaller percentage increase than that projected for the overall population (2.2% between 2000 and 2010, versus an expected 6.6% increase for the total U.S. population) (U.S. Census Bureau, 2002b; U.S. Census Bureau, 2000a).

**Figure 1**



These trends reflect overall trends in the general U.S. population. The “baby boom” generation—the large number of people born between 1946 and 1964, who are now between 39 and 57 years of age—accounts for the overall aging of the U.S. population. Since the “baby boomers” represent about 30% of the current population, the U.S. population is becoming increasingly older (Day, 1993; Day, 1996). The “baby boom” (and the post-1964 decline in birth rates) also drove the decline of the adolescent population in the late 1970s, since the baby

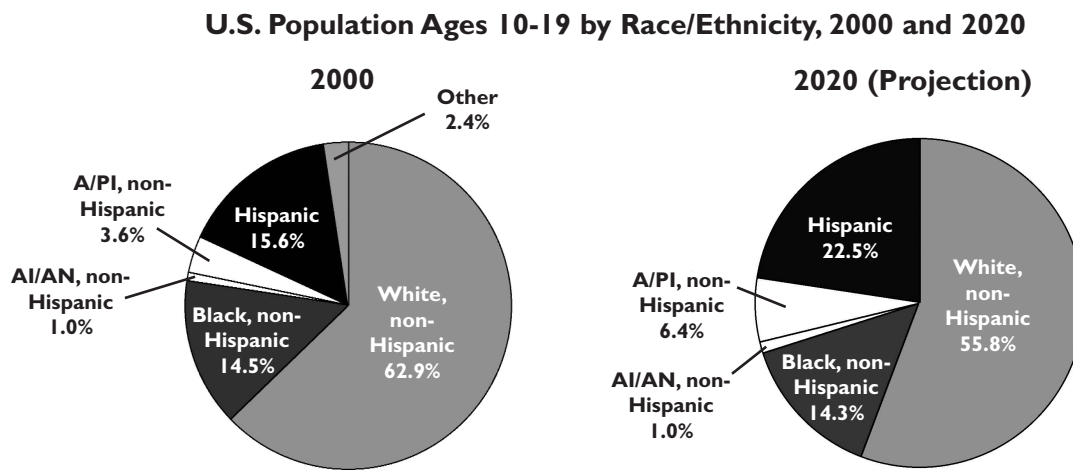
boom generation completed adolescence in the late 1970s. More recent increases in the overall population have been driven by trends including the “baby boomers” having children later in life, high fertility rates of non-White populations, and a large influx of immigrants that tend to be concentrated in their twenties (Day, 1993). More people were added to the nation’s population during the 1990s than at any other time except the 1950s (Hobbs & Stoops, 2002).

## B. RACIAL/ETHNIC COMPOSITION OF THE ADOLESCENT POPULATION

*The adolescent population continues to become more racially and ethnically diverse than the overall U.S. population, with Hispanic and Asian populations increasing as a percentage of 10-19 year-olds.*

The adolescent population is becoming increasingly racially and ethnically diverse. Non-Hispanic Whites comprised 62.9% of the adolescent population ages 10-19 in 2000, a decrease from 76% in 1980. This percentage is projected to continue decreasing and will reach 55.8% in the year 2020. Projections indicate that by 2040 non-Hispanic Whites will no longer represent a majority of adolescents. As of 2000, Hispanics comprised 15.6% of the adolescent population. For non-Hispanic Blacks, non-Hispanic Asians/Pacific Islanders (A/PI) and non-Hispanic American Indians/Alaskan Natives (AI/AN), these figures were 14.5%, 3.6%, and 1.0%, respectively (U.S. Census Bureau, 2000a; U.S. Census Bureau, 2002b) (Figure 2).

**Figure 2**



*2020 pie chart does not have the “Other” category.  
A/PI = Asian/Pacific Islander AI/AN = American Indian/Alaskan Native*

The size of the Hispanic population is increasing rapidly. Between 2000 and 2020, the Hispanic adolescent population ages 10-19 is expected to increase by 50%, comprising 22.5% of the adolescent population in 2020. Non-Hispanic Black and non-Hispanic AI/AN populations are projected to experience relatively small growth (2.5% and 6%, respectively), and will comprise similar percentages of the adolescent population as in 2000. Though small in absolute numbers, the non-Hispanic A/PI population will also experience rapid growth between 2000 and 2010 (83%), rising to 6.4% of the adolescent population (U.S. Census Bureau, 2000a).

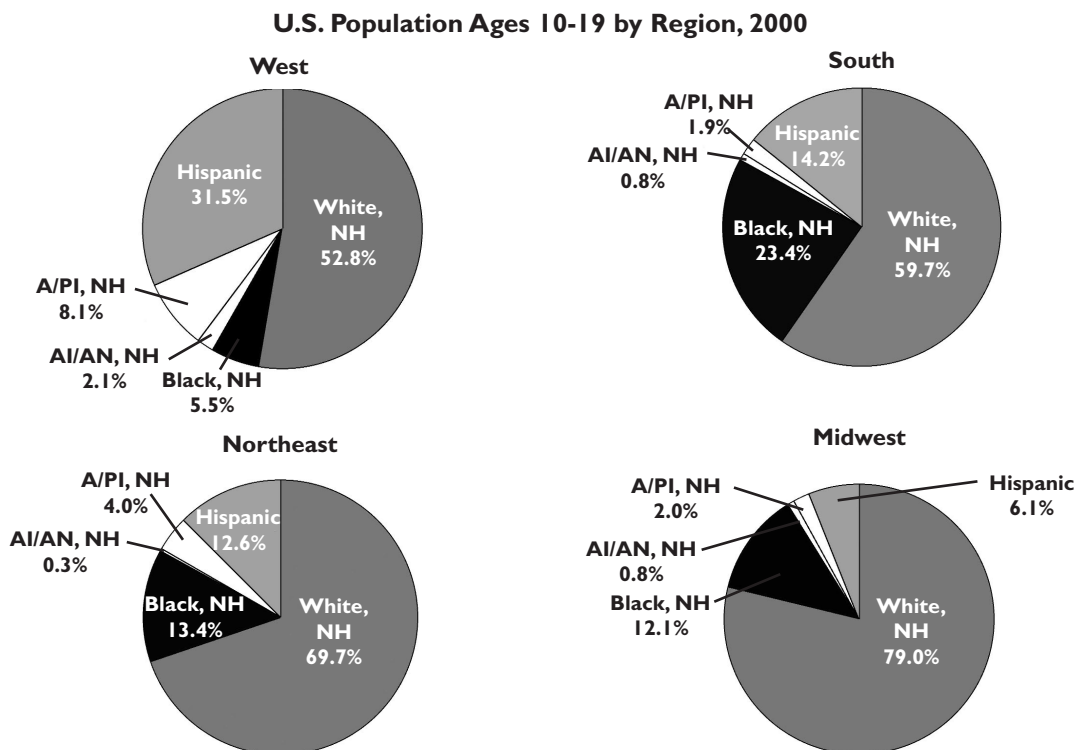
The shift in the racial/ethnic makeup of our youth stems from a number of factors, including the higher immigration of Hispanics and Asians/Pacific Islanders. In addition, as birth and fertility rates among non-Hispanic Whites and Blacks have decreased over the past two decades, there has been an increase in birth and fertility rates among Hispanics (Mackay, Fingerhut & Duran, 2000). These trends have resulted in an adolescent population more diverse than the overall U.S. population.

### C. GEOGRAPHIC LOCATION

*The racial/ethnic composition of the population ages 10-19 varies tremendously by region. While the South is currently home to the greatest number of adolescents, the West is projected to experience the greatest growth.*

According to the 2000 Census, the South<sup>1</sup> has the highest percentage of U.S. adolescents ages 10-19 (35.6%), followed by the Midwest, West, and Northeast (23.5%, 22.7%, and 18.1%, respectively). These figures differ significantly by race/ethnicity. Non-Hispanic Blacks (56.3%) are most likely to live in the South and least likely to live in the West (8.3%). By contrast, Hispanics are most likely to live in the West (45.0%) and least likely to live in the Midwest (9.1%). Non-Hispanic Whites are more evenly spread across the country, with a third living in the South (33.0%), 28.8% in the Midwest, and 19.5% and 18.6% in the Northeast and West, respectively. Nearly half of A/PI and AI/AN 10- to 19-year-olds live in the West (49.4% and 48.2%, respectively). Figure 3 presents regional data another way, examining the racial/ethnic composition of each region. Just four states—California, Texas,

**Figure 3**



NH = non-Hispanic; A/PI = Asian/Pacific Islander; AI/AN = American Indian/Alaskan Native

New York, and Florida—are home to 31% of the U.S. population ages 10-19; and, with 4.8 million people ages 10-19, California alone has almost 12% of the total adolescent population ages 10-19 (U.S. Census Bureau, 2002b).

The Western states have experienced the greatest growth among adolescents ages 10-19, increasing 22.7% between 1990 and 2000. This compares to a 15.6% increase in the South, an 8.8% increase in the Midwest, and an 8.4% increase in the Northeast (U.S. Census Bureau, 2002a; U.S. Census Bureau, 2002b). In addition to the increasing concentration of adolescents in the West and South, more adolescents are living in suburban areas.<sup>2</sup> From 1990 to 2000, the percentage of adolescents ages 12-17 living in the suburbs increased from 46.6% to 52.8% (U.S. Census Bureau, 1992; U.S. Census Bureau, 2002a; Fields & Casper, 2001). In 2000, more than a quarter of adolescents ages 12-17 (27.2%) lived in central city settings and 20% lived in rural areas. White, non-Hispanic youths ages 12-17 are most likely to live in suburban settings (59.1%), followed by Asian Pacific Islanders (49.2%). Among same-age Black, non-Hispanic youths, about half live in central city settings (51.1%) and over a third live in suburban settings (36.3%). Hispanic youths ages 12-17 are about equally likely to live in central city settings or suburban settings (45.2% vs. 44.6%) (Fields & Casper, 2001).

#### **D. SOCIO-ECONOMIC STATUS AND FAMILY STRUCTURE**

*About 15% of adolescents live in poverty. A growing minority of adolescents live in single-parent families. Family structure varies significantly by race/ethnicity, with non-Hispanic Black children most likely to live in single-parent households.*

Socio-economic status and family structure play an important role in shaping the environment in which adolescents live. For instance, adolescents who live in poverty have poorer access to health care, and many of the risky behaviors discussed in Section IV are more common among poor youths than non-poor youths (Goodman, 1999; Lowry, Kann, Collins & Kolbe, 1996). Census data from 1998 indicate that 15.4% of adolescents ages 12-17 live in poverty.<sup>3</sup> This figure is much higher for Black and Hispanic youths (32.4% and 30.8%, respectively) than it is for non-Hispanic White youths (8.3%) (U.S. Census Bureau, 1998).

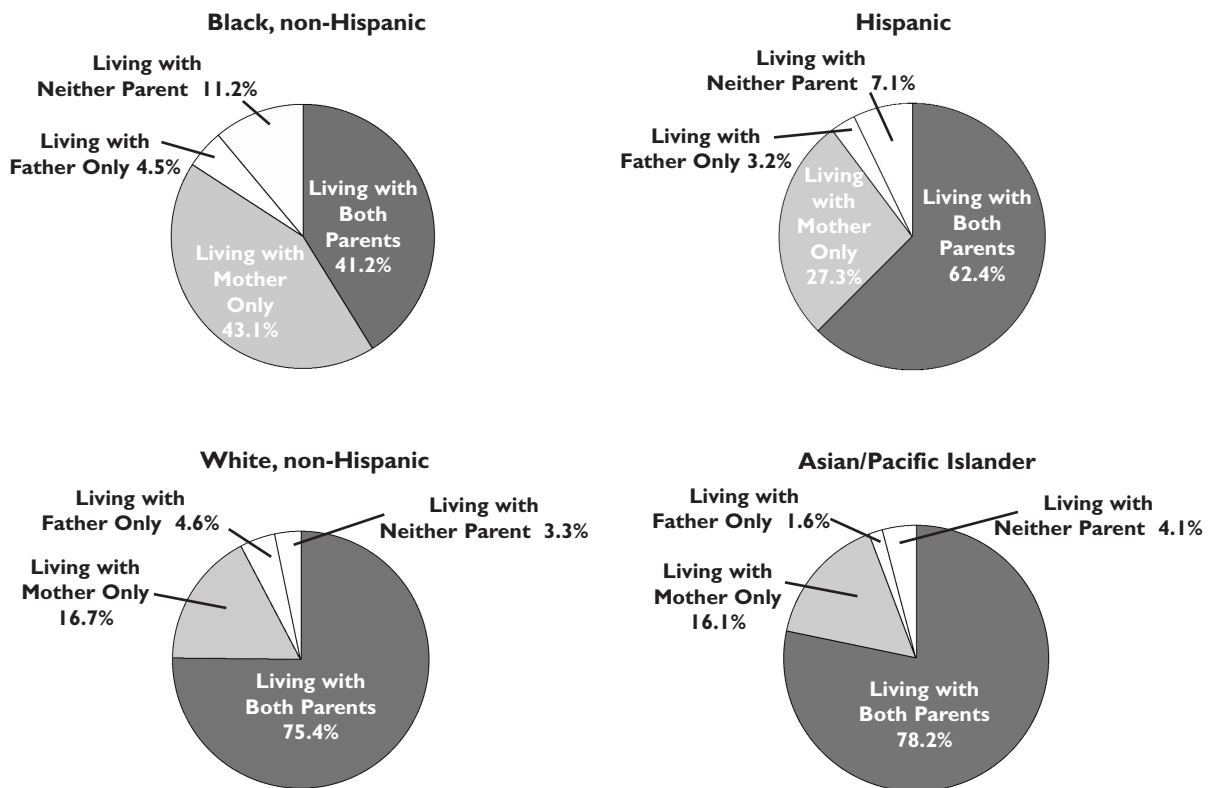
Family structure has changed significantly over the past two decades. In 1980, 77% of children under age 18 lived in two-parent families and 20% lived in single-parent families, compared to 69% and 26%, respectively, in 2001. These figures have not changed significantly since 1996 (FIFCFS, 2002). In 2000, more than three quarters of A/PI youths and non-Hispanic White youths ages 12-17 lived with both parents (78.2% and 75.4%, respectively), as did 62.4% of same-age Hispanics. By contrast, only two fifths of non-Hispanic Blacks (41.2%) in this age group lived in two-parent families (Fields & Casper, 2001) (Figure 4).

Trends in family structure have implications for children's poverty status because single-parent families are more likely to be poor than married-couple families. In 2000, 8% of children under age 18 in married-couple families lived in poverty compared to 40% of children in female-householder families. This disparity in income is largest among Black children: almost half (49%) of those in female-householder families live in poverty,

compared to less than one tenth (8%) of those in married-couple families. Among Hispanic children, having married parents offers less protection against poverty: 21% of children in married-couple families live in poverty compared to 48% in female-householder families. Overall, the percentage of children in poverty declined over the last decade, from a high of 22% in 1993 to 16% in 2000, the lowest rate since 1979. Children in female-householder families have experienced an even steeper decline: in 2000, 40% of these children lived in poverty, a decrease from 51% in 1980. Among Black children in female-householder families, this figure decreased from 66% in 1993 to 49% in 2000 (FIFCFS, 2002). These figures do not reflect the more recent downturn in the U.S. economy.

**Figure 4**

**Family Structure for Adolescents Ages 12-17 by Race/Ethnicity, 2000**



<sup>1</sup> The Census Bureau defines four geographic regions as 1) Northeast-MN, NH, VT, MA, RI, CT, NY, PA; 2) Midwest-OH, IN, IL, MI, WI, MN, IA, MO, ND, SD, NE, KS; 3) West-MT, ID, WY, CO, NM, AZ, UT, NV, WA, OR, CA, AK, HI; and 4) South-DE, MD, DC, VA, WV, NC, SC, GA, FL, AR, LA, OK, TX, KY, TN, AL, MO.

<sup>2</sup> The Census Bureau defines metropolitan areas (MAs) according to standards published by the United States Office of Management and Budget. The general concept of a MA is one of a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that nucleus. Each MA must contain either a place with a minimum of 50,000 or a Census Bureau-defined urbanized area and a total MA of at least 100,000. An MA is comprised of one or more central counties and may include one or more outlying counties. The MA is then subdivided into two categories “inside the central city” and “outside the central city.” A central city is defined as the largest place in the MA and areas “outside the central city” would be considered suburban areas. Areas with smaller populations are considered non-metropolitan areas (non-MAs) and include many rural areas.

<sup>3</sup> In 1998, the poverty threshold for a family of four was \$16,660.

# III.

## ADOLESCENTS AND THE HEALTH CARE SYSTEM

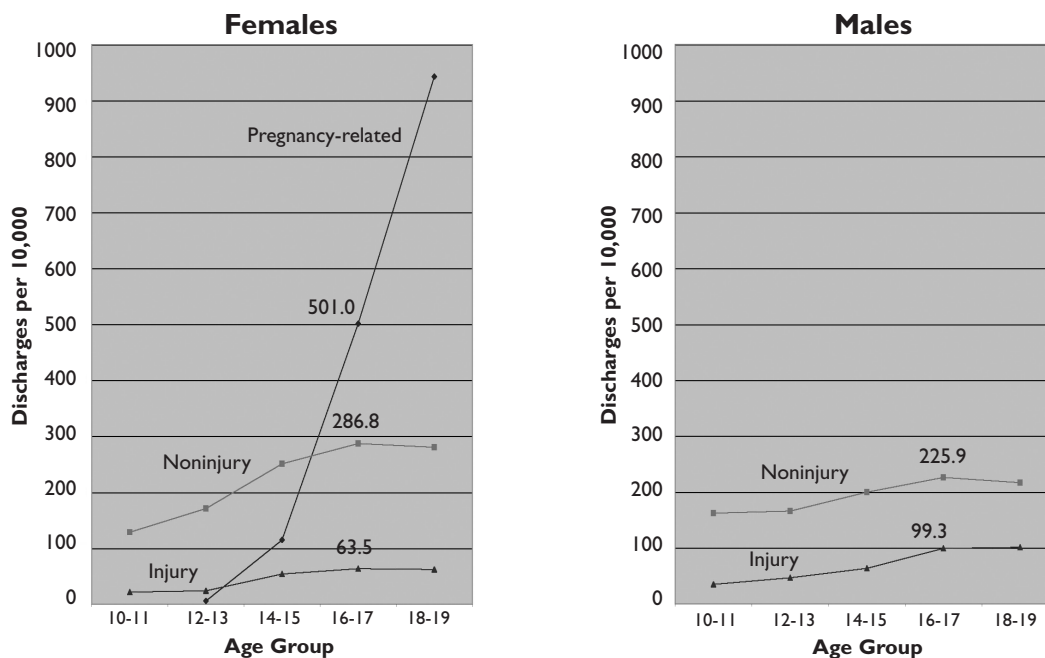
### A. UTILIZATION OF HEALTH CARE SERVICES

*Adolescents generally rely on ambulatory care, especially physician offices and HMOs, for medical treatment. Pregnancy-related diagnoses are the most common reason for hospitalization, followed by injury and mental health diagnoses.*

Compared to most other age groups, relatively few adolescents and young adults are hospitalized and most adolescents depend on outpatient care for medical treatment. In 1998, the vast majority of adolescents ages 12-17 (84.9%) had contact with a health care professional in the preceding year, and almost two thirds (64%) had seen a provider within the last six months (NHIS, 1998 – Blackwell & Tonthat, 2002). Doctor's offices and HMOs serve as the most common source of usual care, although this varies by poverty status: among non-poor adolescents ages 13-17, 81.2% relied on offices for their usual source of care, compared to 67.7% of adolescents living in poverty. More than a quarter of poor adolescents ages 13-17 (28.2%) used a clinic or health center (NHIS, 2000 – MCHB, 2002). Four fifths (79.8%) of adolescents ages 12-17 visited a dental health professional within the past year and almost three fifths (58.2%) had such a visit within the past six months. In 1998, 12.2% of adolescents ages 12-17 (13.4% of males and 19.8% of females) were regularly taking a prescription medication (NHIS, 1998 – Blackwell & Tonthat, 2002).<sup>1</sup>

In 2000, 1.1 million adolescents ages 15-19 were hospitalized, accounting for a relatively small 3.6% of all hospital stays (NHDS, 2000 – Kozak, Hall & Owings, 2002). Pregnancy-related diagnoses are the leading cause of hospitalization, followed by injury and mental health diagnoses. Among females ages 16-17, the hospital discharge rates (per 10,000) for these three diagnoses were 501.0, 63.5, and 40.2, respectively. Among 16- to 17-year-old males, discharge rates (per 10,000) for injury and mental health disorders were 99.3 and 29.5, respectively (NHDS, 1995-1997 – Mackay et al., 2000).

As indicated in Figure 5, patterns of hospitalization vary significantly by gender, due in large part to hospitalizations for pregnancy-related causes among adolescent females. These causes account for more than half (53%) of all hospitalizations for females ages 10-19. When grouped together, all non-injury causes become the second most common discharge diagnosis category for adolescents ages 10-19. Excluding pregnancy-related causes, non-injury diagnoses account for 72% of hospitalizations for males and 39% for females. The most common non-injury diagnoses are mental health disorders and asthma (NHDS, 1995-1997 – Mackay et al., 2000). In 2000, 17.6% of children ages 6-17 had at least one emergency department visit (NHIS, 2000 – NCHS, 2002b). Injury diagnoses account for over half of visits to the emergency room among adolescents ages 10-19 (NHAMCS, 1995-1997 – Mackay et al., 2000).

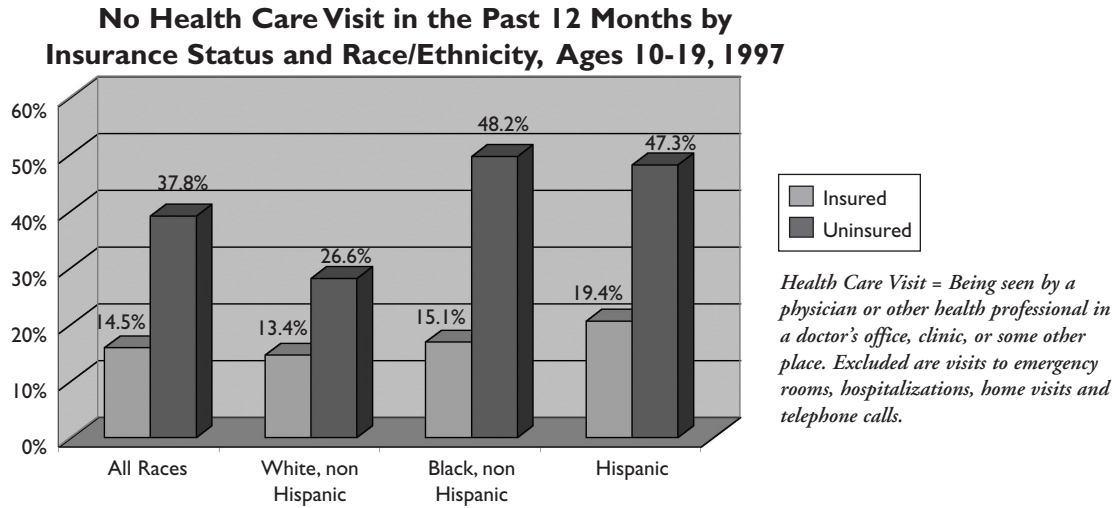
**Figure 5****Short-stay Hospital Discharge Rates by Gender and Type, Ages 10-19, Annual Average 1995-1997****B. ACCESS TO HEALTH CARE SERVICES**

*Most adolescents have access to a usual source of care. However, a significant minority—including the uninsured, the poor, some racial/ethnic groups, and adolescents with certain risk factors—report having foregone needed care and having unmet health needs. Having health insurance plays a significant role in access to care.*

Even though the vast majority of adolescents (91.7%) have a usual source of care, research has identified numerous factors impeding access to care (NHIS, 1998 – Blackwell & Tonthat, 2002). Barriers to adolescents receiving health care include: lack of experience in negotiating complex and fragmented medical systems, inconvenient hours and location, concern about confidentiality, and cultural and linguistic barriers (Park et al., 2001).

A substantial literature has demonstrated the strong effect of ability to pay for services on adolescents' access to services. Several studies have documented the importance of health insurance to adolescents' access to services (Newacheck & McManus, 1989; Newacheck, McManus & Brindis, 1990; Bartman, Moy & D'Angelo, 1997; Newacheck, Brindis, Cart, Marchi & Irwin, 1999; Blackwell & Tonthat, 2002). These studies have shown insurance status to be associated with several indicators of access. For example, uninsured adolescents are less likely to have a usual source of care, to be able to get needed care, and to have had a physician contact in the past year. (Figure 6 shows no past-year health care visits by insurance status and race/ethnicity). Nationally, about 3.1 million adolescents (13.1%) ages 10-18 had no health insurance in 1998 (NHIS, 1998 – Blackwell & Tonthat, 2002). The percentage of adolescents without health insurance remained fairly stable between 1984 and 1995, hovering between 14-15%. However, the source of insurance changed during that time period: the percentage of adolescents ages 10-18 with private insurance decreased from 74.0% to 69.1%, while the percentage with public insurance increased from 10.0% to 14.8% (Newacheck et al., 1999).

**Figure 6**



Uninsured adolescents are concentrated in poor and near-poor households and minority families. Data from 1995 show that about a quarter of poor (27.4%) and near-poor (24.8%) adolescents ages 10-18 are uninsured, compared to 4.1% of their higher-income peers. These data also show that Hispanic (31.6%) and non-Hispanic Black (14.9%) adolescents are more likely to be uninsured than non-Hispanic White (10.7%) adolescents (NHIS, 1995 – Newacheck et al., 1999). The uninsured also tend to be adolescents with significant health problems and needs, since poverty is associated with increased risk of chronic health conditions (Newacheck et al., 1990).

Even though adolescents from poor families tend to have more health problems, they regularly use health services less often than do more affluent adolescents. In addition, adolescents who engage in risky behaviors or have other risk factors are more likely to report having foregone health care—not receiving health care that they thought “they should get.” According to an analysis of AddHealth data, 18.7% of adolescents in grades 7-12 reported having foregone health care. For example, among adolescents with disabilities, 34.9% did not receive health care they thought “they should get.” Corresponding figures of foregone care for other behaviors/risk factors include: frequent alcohol users, 30.3%; frequent smokers, 26.0%; sexually active adolescents, 25.1%; and overweight adolescents, 21.6% (Ford, Bearman & Moody, 1999). By contrast, national surveys based on parental reporting indicate that a small portion of adolescents have unmet health needs. In 1998, 2.5% percent of 12-17 year-olds (598,000 youths) were reported to have unmet medical needs and almost one in twenty (4.6%) delayed care due to cost (about 1.1 million adolescents) (NHIS, 1998 – Blackwell & Tonthat, 2002).

National data indicate even poorer access to oral health care services. About 1.6 million 12- to 17-year olds (6.9%) were reported to have unmet dental needs (NHIS, 1998 – Blackwell & Tonthat, 2002). Poor adolescents ages 12-17 are more likely to have untreated tooth decay than their non-poor peers. This difference is most pronounced among Mexican-Americans: 47.2% of poor Mexican-Americans ages 12-17 have untreated decayed teeth compared to 23.1% of their non-poor peers (DHHS, 2000). The Medicaid program includes a preventive dental services benefit for children and adolescents. However, national data suggest that most eligible children and adolescents do not receive this benefit. In 1993, only 30.0% of 6- to 14-year-olds and 19.5% of 15- to 20-year-olds received preventive dental services (DHHS, 1996a).

## C. ACCESS TO HEALTH CARE SERVICES FOR SPECIAL POPULATIONS

*Special populations of adolescents, including those with chronic health conditions, physical disabilities, activity limitations, and mental health disorders, require a special constellation of services. These adolescents often face extra barriers to care.*

The health care needs of special populations of adolescents warrant attention. Data from 1994 indicate that about one in five adolescents (21% of 11-14 year olds and 21.5% of 15-17 year olds) has an existing special health care need<sup>2</sup> (NHIS, 1994 – Newacheck et al., 1998).

Chronic conditions and disabilities can be measured according to activity limitations resulting from a chronic disease or impairment. Estimates of the percentage of adolescents with disabilities range from 31%, where broad criteria are used, to 6%, where more restrictive definitions are used (Newacheck & Halfon, 1998, as cited in Scal, 2002). In 1997, 11.2% of 15-21 year olds (about 3.9 million youths) had a disability<sup>3</sup> (U.S. Census Bureau, 2000c). According to the 2000 National Health Interview Survey (NHIS), 7% of young people ages 5-17 had some activity limitation due to chronic conditions (NHIS, 2000 – FIFCFS, 2002). Adolescent-specific data from the 1997 NHIS indicate that 8.4% of adolescents ages 10-17 had such activity limitations (Mackay et al., 2000).

The definition of adolescents with activity limitations also includes those who “receive only special education services” in school due to difficulty understanding or accomplishing routine school work. Such limitations comprise more than half of the activity limitations among adolescents. Overall, 5.6% of adolescents ages 10-17 had an activity limitation due to receipt of special education services.<sup>4</sup> Males were twice as likely as females to receive special education services (7.4% vs. 3.6%), and were slightly more likely to have other limitations (3.2% vs. 2.4%). Activity limitations were more common among poor and near-poor adolescents (12.3% & 10.2%, respectively) than non-poor adolescents (7.4%). This difference was driven in large part by the larger percentage of poor and near-poor adolescents receiving special education (8.3% & 7.7%, respectively), compared to non-poor adolescents (4.7%). Smaller differences exist among racial/ethnic groups, with non-Hispanic White and Black adolescents somewhat more likely to have activity limitations than their Hispanic peers (9.0% & 8.9%, vs. 6.1%, respectively) (NHIS, 1997 – Mackay et al., 2000).

Adolescents with chronic illness and disability include a small number whose chronic conditions result in limitations in activities of daily living (ADLs).<sup>5</sup> These limitations require ongoing services to maintain or enhance daily life functioning. In 1997, 115,000 youths ages 15-21 were reported to have difficulty with one or more ADLs (U.S. Census Bureau, 2000c).

Although relatively few adolescents have chronic conditions or disabilities, these young people have complex health care needs that often require a constellation of services to ensure optimal health, development, and successful transition to adulthood (White, 2002). Overall, children with special health care needs use health care services at higher rates than their peers without special health care needs. For example, 52.6% of children over age 5 with activity limitations visited a doctor at least four times in the previous year, compared to 23.6% of their peers without such limitations (NHIS, 2000 – MCHB,

2002). Because of these greater needs, barriers to health care can have particularly serious consequences for this population. In 1994, almost a third (32%) of uninsured children with special health care needs were unable to get needed medical care (NHIS, 1994 – Newacheck, McManus, Fox, Hung & Halfon, 2000).

Adolescents with mental health disorders also have special health care needs and face barriers to access. As noted earlier, there are limited national data on the mental health status of children and adolescents. However, the Surgeon General’s Report on Mental Health states that about one in five (20.9%) children ages 9-17 have a mental or addictive disorder, including anxiety, mood, disruptive, and substance use disorders (Shaffer et al., 1996, as cited in DHHS, 1999). Data from the National Household Survey on Drug Abuse (NHSDA) provide some information about adolescents’ receipt of mental health care services. Among adolescents ages 12-17, 18.4% (or about 4.3 million youths) received treatment or counseling for emotional or behavioral problems in the preceding year—a significant increase from 14.5% in 2000.<sup>6</sup> Asian youths were the least likely to report treatment (9.8%), while the rate for all other racial/ethnic groups<sup>7</sup> ranged between 17.2% to 21.7%. Among youths ages 16-17, girls were more likely to report receiving treatment than boys (21.7% vs. 13.9%). The survey showed only slight differences by age group (i.e., ages 12-13, 14-15, 16-17), income, and region of the U.S. Slightly more adolescents sought help from school resources<sup>8</sup> (46.5%) than private resources<sup>9</sup> (44.1%) (NHSDA, 2001 – SAMHSA, 2002). Finally, an estimated 100,000 youths ages 12-17 received treatment at a specialty facility<sup>10</sup> for abuse of, or dependence on, an illicit drug—a figure representing 11.4% of those needing treatment (NHSDA, 2000 – OAS, 2002).

<sup>1</sup>. These data are based on responses to the following question: “Does “child’s name” now have a problem for which (he/she) has regularly taken prescription medication for at least 3 months?”

<sup>2</sup>. A child with a special health care need is defined here as a child having a chronic physical, developmental, behavioral, or emotional condition and who also requires health and related services of a type or amount beyond that required by children generally.

<sup>3</sup>. The definition of disability for Survey of Income and Program Participation (SIPP), the source for this data, varies by age. In general, a disability is considered a reduced ability to perform tasks one would normally do at a given stage in life. More information on SIPP and disability is available from: <http://www.census.gov/hhes/www/disability.html>.

<sup>4</sup>. For NHIS, limitations include: needing another person’s assistance with personal care needs, difficulty walking or difficulty remembering or experiencing periods of confusion. Limitations also include receiving only special education services in school due to difficulty understanding or accomplishing routine school work. See Mackay et al., 2000 and Scal, 2002.

<sup>5</sup>. ADLs include: getting around inside the home, getting in or out of a bed or chair, taking a bath or shower, dressing, eating, and using the toilet.

<sup>6</sup>. These youths may or may not have a disorder as defined by Shaffer et al., 1996, as cited in DHHS, 1999.

<sup>7</sup>. Other races include: youths reporting more than one race, and AI/AN, White, Black and Hispanic youths.

<sup>8</sup>. School resources include: counselors, school psychologists or teachers.

<sup>9</sup>. Private resources include: therapists, psychologists, psychiatrists, social workers, or counselors.

<sup>10</sup>. Specialty facilities include drug and alcohol rehabilitation facilities (inpatient or outpatient), hospitals (inpatient only), and mental health centers.

# IV.

## ADOLESCENT HEALTH STATUS

Health status has traditionally been assessed by adverse medical outcomes, including mortality and morbidity, as well as by measures of health care utilization such as hospitalization and use of ambulatory health care. For adolescents, a discussion of health status also encompasses a focus on risky behavior. In this section, we present a profile of adolescent health. We describe health status in terms of both negative medical outcomes and risky behaviors, examining trends and disparities. As noted in the introduction, the health issues of adolescence also contribute to the major health problems in the adult population. The adolescent health profile is organized into the following categories:

- Overall Mortality
- Unintentional Injury
- Violence
- Suicide & Mental Health
- Substance Use
- Reproductive Health
- Physical Activity, Diet & Obesity

In part, this organization reflects the relative abundance of data on risky behaviors and their consequences. As mentioned in the introduction, a more comprehensive adolescent health profile would also present data on healthy development as well as the contexts in which adolescents make health-related decisions. We present topics separately as reflected by national data, which generally offer profiles of individual behaviors and adverse outcomes. In Section V, we will discuss how research has demonstrated that risk-taking behaviors have many common antecedents and are often clustered among specific groups of adolescents.

### A. OVERALL MORTALITY

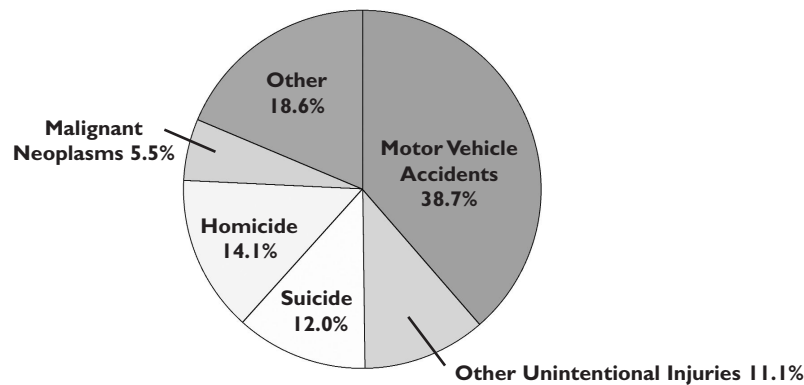
*After peaking in the early 1990s, mortality rates have fallen to (or are near) record lows for all adolescents. However, significant disparities persist in mortality rates. Male adolescents continue to die at more than twice the rate of female adolescents, and American Indian and Black males continue to die at the highest rates.*

Over the last century, the leading causes of death for adolescents changed from natural causes (e.g., illness and birth defects) to injury and violence. In 1933, for example, 75% of deaths among teenagers ages 15-19 were due to natural causes, but by 2000, 76% of deaths in this age group were from unintentional injury, homicide and suicide (Figure 7) (NCHS, 2002a; Anderson, 2002; NCIPC, 2002).

During the past twenty years, mortality rates for adolescents and young adults ages 10-24 have decreased for all age groups and are now at (or are near) historical lows for all racial/ethnic and age groups. During two brief periods (1986 and 1993-94), the mortality rate increased slightly, followed by continued decline. Between 1979 and 2000, the overall mortality rate for 10- to 24-year-olds fell from 89.7/100,000 to 60.9/100,000 (Anderson, 2002; CDC 2002c). In 2000, young adolescents (ages 10-14) had a mortality rate of 20.9/100,000. For older adolescents (ages 15-19) and young adults (ages 20-24), these figures were 68.2/100,000 and 96.0/100,000, respectively (Anderson, 2002).

**Figure 7**

**Leading Causes of Mortality, Ages 15-19, 2000**

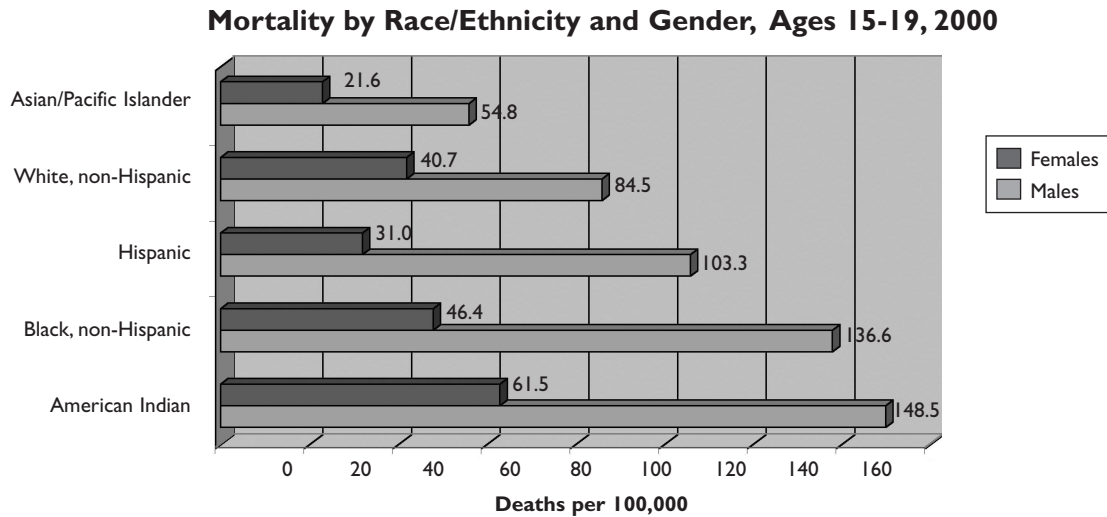


As evidenced by these age-specific death rates, death rates are higher for older adolescents and young adults. Older adolescents experience a death rate more than three times that of young adolescents (Anderson, 2002). Violent causes of death are responsible for this increase. In 2000, 51.0% of deaths among young adolescents were due to unintentional injury, homicide, or suicide. For older adolescents and young adults these figures increase to 75.9% and 71.9%, respectively (NCIPC, 2002).

These overall data mask significant differences in mortality by gender and race/ethnicity. As illustrated in Figure 8, young males are dying at a consistently higher rate than young females across all races/ethnicities. Among adolescents and young adults ages 10-24 in 2000, males were 2.5 times more likely to die than females (85.9/100,000 vs. 34.6/100,000). The gender disparity in mortality also holds true across the three age groups. Among young adolescents, the death rate for males was about 1.5 times that of females (25.0 vs. 16.6/100,000). For older adolescents, the male rate was 2.4 times that of females (94.9 vs. 40.0/100,000) and for ages 20-24, males were 3 times more likely to die than their female peers (142.0 vs. 48.2/100,000) (Anderson, 2002).

Figure 8 also shows significant differences in mortality rates by race/ethnicity. As we describe in the following pages, these disparities are primarily due to higher homicide rates among non-Hispanic Black and Hispanic youth, and higher suicide and motor vehicle accident death rates among American Indian (AI) youth, compared to non-Hispanic White and Asian/Pacific Islander (A/PI) youth (Anderson, 2002).

**Figure 8**



## B. UNINTENTIONAL INJURY

*Overall trends in unintentional injuries are promising. Driven by a decrease in fatal motor vehicle accidents, unintentional injury mortality rates have fallen over the past two decades, although American Indian/Alaskan Native young males continue to die at the highest rates. Fewer adolescents report driving drunk or riding with a driver who has been drinking, and more adolescents are wearing seatbelts. Males are more likely to engage in most of these risky behaviors.*

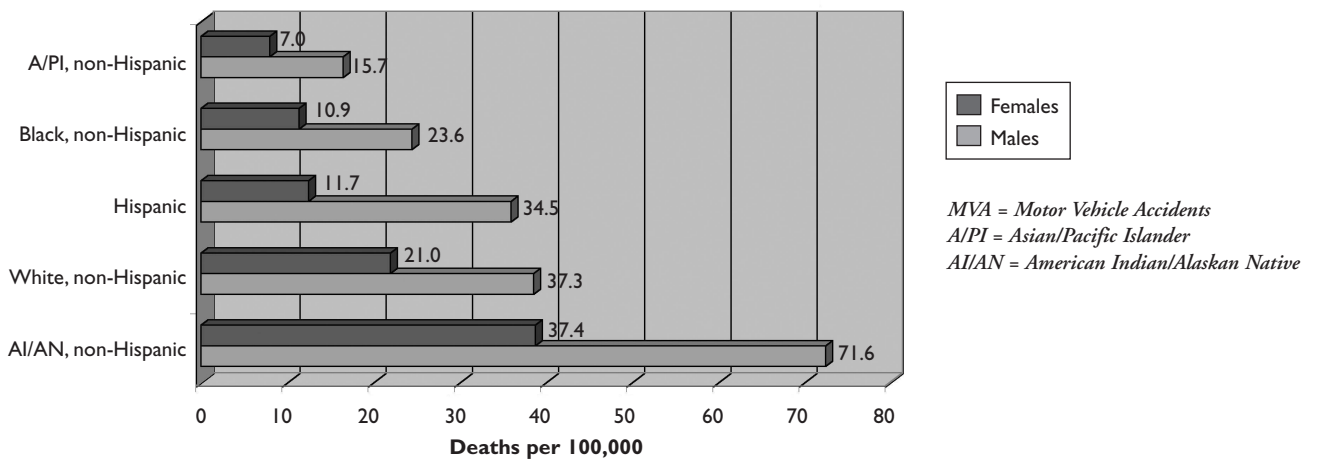
### ■ Mortality

Unintentional injuries account for the greatest number of adolescent deaths. In 2000, 15,701 adolescents and young adults ages 10-24 were killed as a result of unintentional injuries, representing 44% of deaths in this age group. Among 15-19 year-olds, approximately 78% of these deaths involved motor vehicle accidents (MVAs). As illustrated in Figure 9, males are about twice as likely to die from MVAs as females. Also, non-Hispanic American Indians/Alaskan Natives are most likely to die from MVAs, with a mortality rate about two to four times that of other racial/ethnic groups (Anderson, 2002; NCIPC, 2002).

MVA mortality rates for 10-24 year-olds have fallen steadily over the past two decades, from 31.0/100,000 in 1981 to 19.8/100,000 in 2000. For 15-19 year-olds over the same period, this rate fell from 38.7/100,000 to 26.4/100,000. Among males ages 15-19, the rate dropped from 66.5/100,000 to 34.5/100,000 (NCIPC 2002). Between 1990 and 2000, the mortality rate for alcohol-related MVAs fell from 16.3/100,000 to 9.0/100,000 for adolescents ages 16-20 (NHTSA, 2001; NCIPC, 2002). The decrease in adolescent MVA mortality has paralleled healthy changes in behaviors linked to MVAs—e.g., a decrease in drinking and driving (or riding with a driver who has been drinking) and an increase in wearing a seat belt.

**Figure 9**

**MVA Mortality by Race/Ethnicity and Gender, Ages 15-19, 2000**



Despite these substantial improvements, MVA mortality rates for adolescents ages 15-19 increased slightly between 1981 and 2000 for the following gender-racial/ethnic groups: Black males, A/PI females, and Black females. Between 1990 and 2000 the MVA mortality rate for Hispanic females ages 15-19 rose slightly. Although these gender-racial/ethnic groups have experienced an increase in MVA mortality, these MVA-related deaths are a relatively small proportion of their overall mortality (NCIPC, 2002).

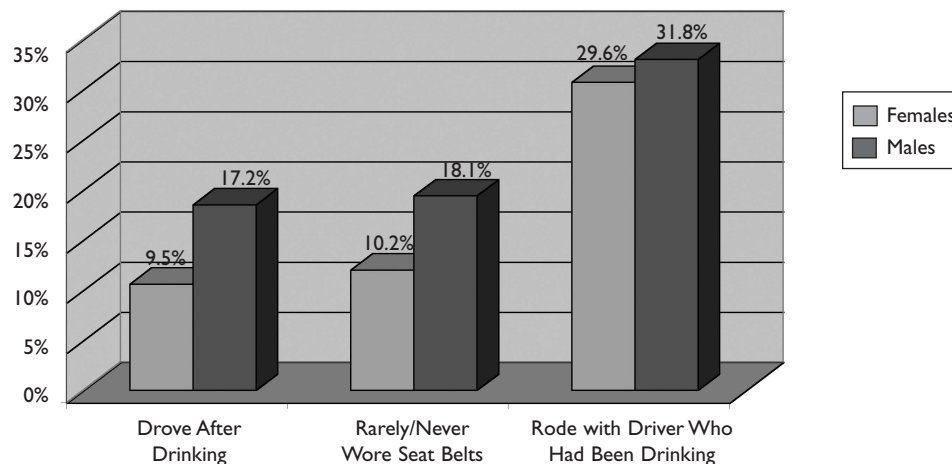
### ■ *Drinking and Driving*

Alcohol plays a significant role in MVA mortality. Although alcohol was involved in only 4.8% of all MVAs involving adolescents and young adults ages 16-24 in 2000, 28.7% of fatal MVAs for this age group involved a driver who had been drinking (NHTSA, 2001). In 2001, less than a third of high school students (30.7%) reported that they rode, within the previous 30 days, with a driver who had been drinking—a large decrease from 40% in 1991. Similarly, the percentage of high school students who report driving after drinking in the past 30 days fell from 16.7% in 1991 to 13.3% in 2001. Males and females reported similar levels of riding with a driver who had been drinking (Figure 10). However, Hispanic students (38.3%) were somewhat more likely than non-Hispanic White (30.3%) and non-Hispanic Black students (27.6%) to report this behavior (YRBSS, 2001 – Grunbaum et al., 2002).

Data show a slightly different pattern for *driving after drinking*, with males significantly more likely than females to report this behavior (17.2% vs. 9.5%) (Figure 10). This gender difference is most pronounced for non-Hispanic Black students (12.5% vs. 3.3%). Non-Hispanic White and Hispanic students report similar levels of driving after drinking (14.7% and 13.1%, respectively), while non-Hispanic Black students (7.7%) were least likely to report this behavior. Not surprisingly, the percentage of students who drove after drinking increases for each grade—with 6.6%, 10.4%, 17.7% and 22.1% of 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> graders reporting this behavior, respectively (YRBSS, 2001 – Grunbaum et al., 2002).

**Figure 10**

**Injury Risk Behavior by Gender, High School Students, 2001**



■ *Seat Belt Use*

Seat belt use also plays an important role in MVA mortality among adolescents and young adults. Among fatal MVAs involving adolescents ages 16-24, 62% of occupants were not wearing seat belts as opposed to about 30% who were restrained. Among non-fatal MVAs, 75% of occupants used restraints, and 17% of occupants did not use restraints<sup>1</sup> (NHTSA, 2001). Seat belt use among high school students increased over the last decade, with 14.1% reporting “rarely” or “never” wearing a seat belt in 2001, compared to 25.9% in 1991. Data from 2001 also show that males are more likely to report “rarely” or “never” wearing a seat belt than females (18.1% vs. 10.2%) (Figure 10). These figures vary little by race/ethnicity (YRBSS, 2001 – Grunbaum et al., 2002).

■ *Riding Motorcycles and Bicycles*

In 2001, about a quarter of adolescents nationwide reported riding a motorcycle within the past year. Of those people, 37.2% rarely or never wear a helmet. Most adolescents ride bicycles (65.1%) and most of them rarely or never wear bicycle helmets (84.7%) (YRBSS, 2001 – Grunbaum et al., 2002).

## C. VIOLENCE

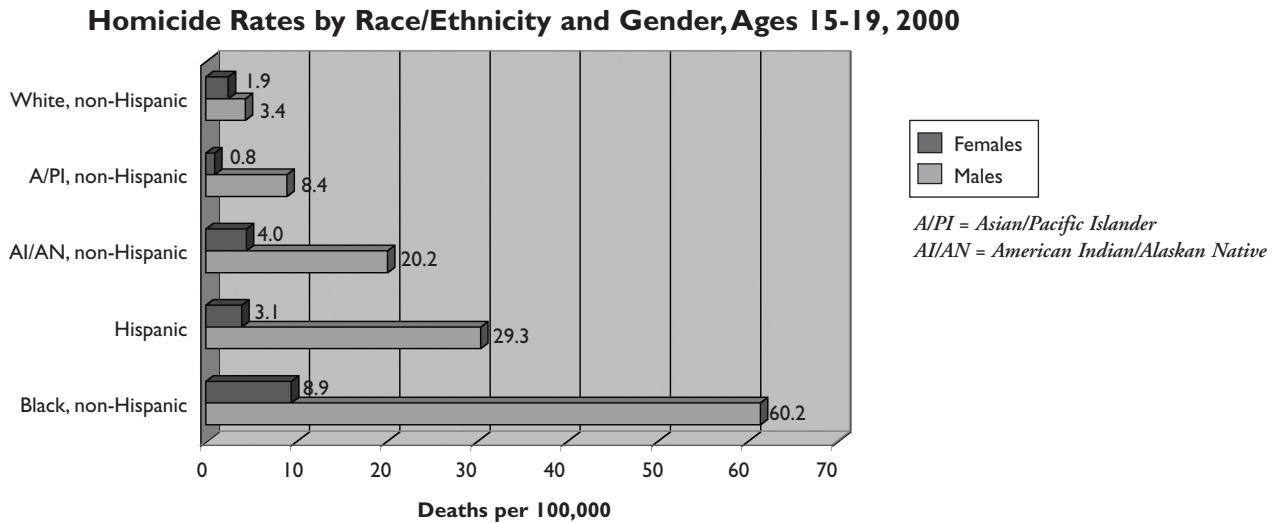
*Overall, the prevalence of violence in adolescents’ lives decreased in the last decade. In addition to a dramatic decline in homicide rates, adolescents are fighting less, are perpetrating fewer violent crimes, and are less likely to carry weapons. A continuing concern, however, is the extent to which violence disproportionately affects the lives of young Black males.*

■ *Homicide*

Homicide is the second leading cause of death for U.S. youth ages 10-24. In 2000, 5,170 adolescents ages 10-24 were murdered. Homicide is the leading cause of death among non-Hispanic Black males ages 10-24, accounting for almost half of all deaths among this population (48%) (NCIPC, 2002). As shown in Figure 11, the 2000

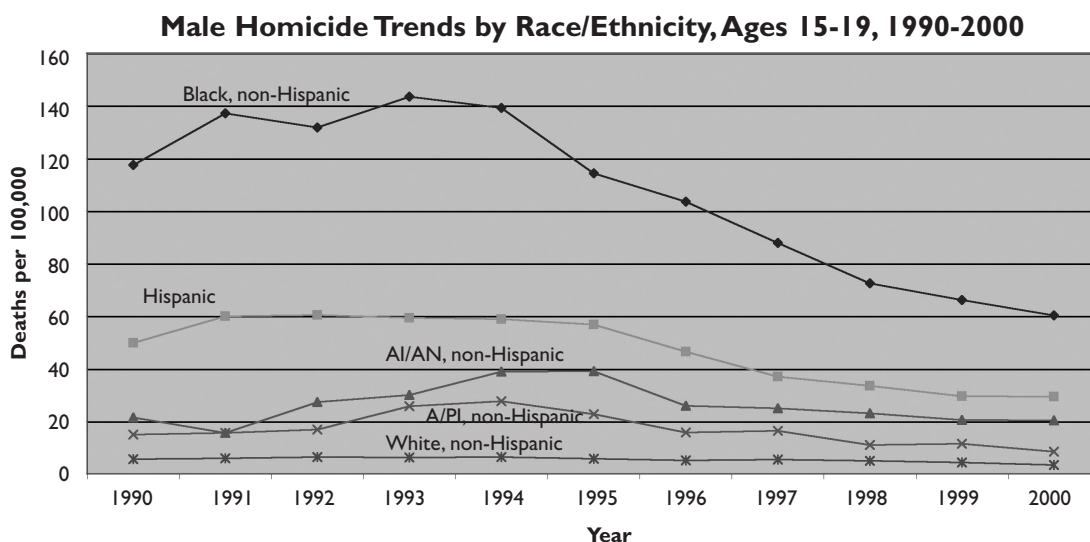
homicide rate among non-Hispanic Black males ages 15-19 was 60.2/100,000, a figure 2.2 to 17.7 times that of same-age males in other racial/ethnic groups. Figure 11 also shows that adolescent males are much more likely to be victims of homicide than are females.

**Figure 11**



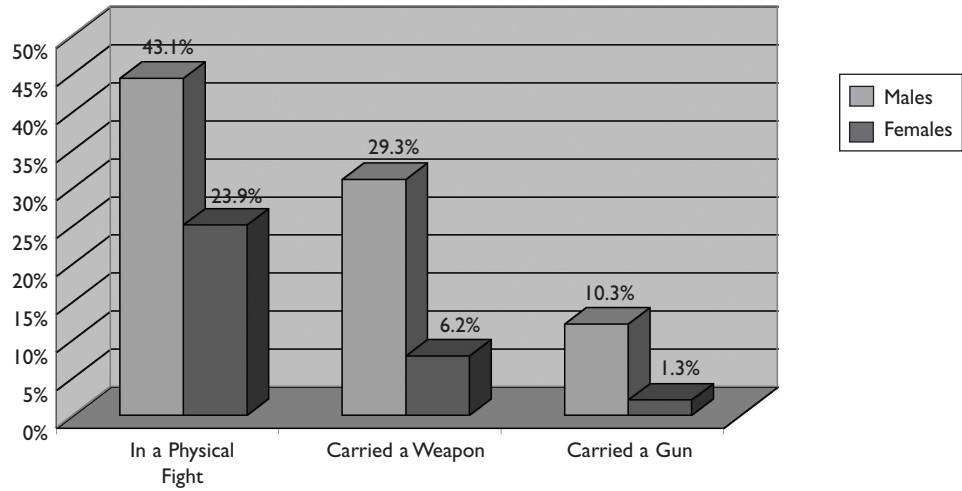
Homicide rates for 15-19 year-olds dropped to a record low of 8.1/100,000 in 1984 and rose steadily until 1993. As indicated in Figure 12, homicide rates have decreased dramatically since peaking in the early 1990s. However, rates for all gender-racial/ethnic groups are still above their record lows of the mid 1980s. Non-Hispanic Black males experienced the steepest decline, falling 58% from the 1993 peak of 143.4/100,000 to 60.2/100,000 in 2000 (NCIPC, 2002).

**Figure 12**



**Figure 13**

**Violence-Related Behavior by Gender, High School Students, 2001**



■ *Weapon Carrying*

In 2001, 17.4% of high school students reported carrying some type of weapon such as a gun, knife, or club in the 30 days prior to being surveyed, with males (29.3%) almost five times more likely to report this behavior than females (6.2%) (Figure 13). These 2001 data show little difference in weapon carrying by race/ethnicity. The incidence of weapon carrying decreases in higher grades, with 19.8% of 9<sup>th</sup> graders reporting this behavior versus 15.1% of 12<sup>th</sup> graders (YRBSS, 2001 – Grunbaum et al., 2002).

Gun carrying follows a similar pattern. In 2001, 5.7% of students reported carrying a gun. Males are significantly more likely to carry a gun than females (10.3% vs. 1.3%). Gun carrying varies little by race/ethnicity, but does decrease slightly from 9<sup>th</sup> grade (6.8%) to 12<sup>th</sup> grade (4.7%) (YRBSS, 2001 – Grunbaum et al., 2002). Firearms play an important role in adolescent homicide: in 2000, firearms were used in over 80% of cases where the victim was 15-24 years of age. This figure declines to 74% for ages 25 to 34, 59% for ages 35 to 44, and continues to decline throughout the lifespan (NCIPC, 2002).

■ *Physical Fighting*

In 2001, 33.2% of high school students reported having been in at least one physical fight in the last 12 months, down from 42.5% in 1991. Males were much more likely to have been in a fight than females (43.1% vs. 23.9%). Non-Hispanic Black (36.5%) and Hispanic (35.8%) students were slightly more likely than their non-Hispanic White (32.2%) peers to report fighting. As with weapon carrying, the frequency of this behavior decreased in higher grades: 39.5% of 9<sup>th</sup> graders reported fighting, compared to 29.1% of 12<sup>th</sup> graders. In 2001, 4.0% of all students reported sustaining a serious injury in a fight (5.2% of males and 2.9% of females) (YRBSS, 2001 – Grunbaum et al., 2002).

■ *Violent Behavior on School Property*

In 2001, 6.4% of high school students reported carrying their weapon on school property during the past month, compared to 11.8% in 1993. In addition, 8.9% of students were threatened or injured with a weapon at school during the previous 12 months;

12.5% of students reported having been involved in at least one physical fight that took place on school grounds; and about 6.6% of students said that they did not attend school in the previous 30 days because they felt unsafe either at school or going to and from school. These figures varied little by race/ethnicity (YRBSS, 2001 – Grunbaum et al., 2002).

#### ■ *Crime and Victimization*

In 2000, 1.4 million adolescents/young adults ages 12-24 were victims of a non-fatal, serious violent crime<sup>2</sup> (BJS, 2002). When adolescents commit violent crimes, their victims are usually other youths. In addition, when adolescents are victims of such crimes, their assailants are usually other youths. In 1999, about two thirds of violent crimes involving young victims ages 12-19 were perpetrated by youths ages 12-20; and about two thirds of violent crimes perpetrated by adolescents had adolescent victims (BJS, 2001).

The past decade has witnessed dramatic declines in violent crime involving adolescents. Between 1994 and 2000, the homicide offending rate for young Black males ages 14-17 dropped from 226.7/100,000 to 62.8/100,000. White males ages 14-17 experienced a smaller decline, decreasing from 22.4/100,000 to 7.9/100,000 over the same period (Fox & Zawitz, 2002).

## D. SUICIDE AND MENTAL HEALTH

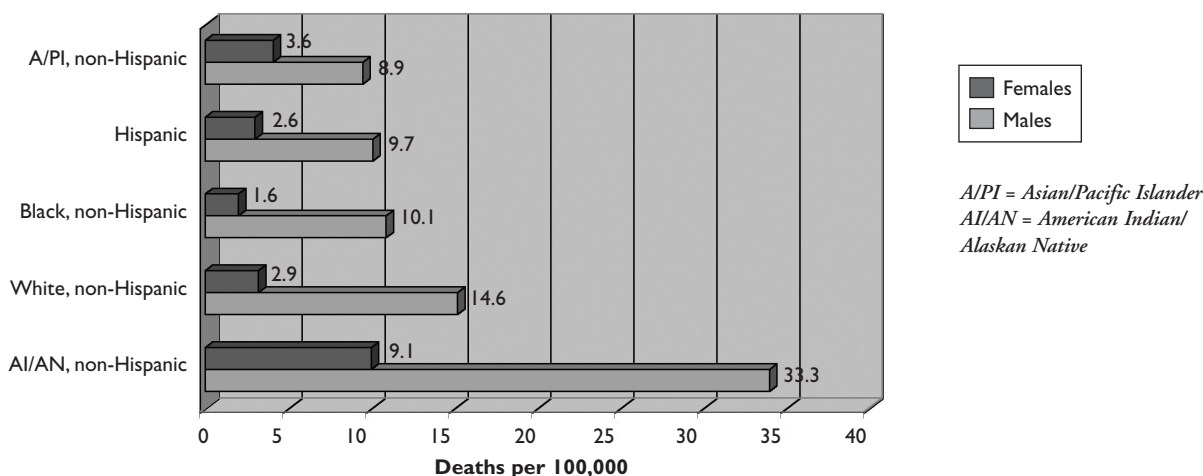
*Adolescent suicide rates have remained stable over the past two decades, with American Indian/Alaskan Native males consistently committing suicide at rates much higher than other adolescents. While adolescent males overall are more likely to commit suicide, females are more likely to attempt suicide and report suicide-related ideation. There are few national data on adolescent mental health status.*

Suicide is the third leading cause of death for adolescents, with 4,294 adolescents and young adults ages 10-24 committing suicide in 2000. Over the past two decades, suicide rates have remained relatively stable, fluctuating slightly for some racial/ethnic groups. Although suicide represents a small proportion of deaths for younger adolescents ages 10-14, this group has experienced the greatest increase in suicide rates—from 0.89/100,000 in 1981 to 1.5/100,000 in 2000. Among 15- to 19-year-olds, rates have stabilized (8.2/100,000 in 2000) after peaking in the early 1990s. Rates for young adults ages 20-24 (12.7/100,000 in 2000) have declined 18.5% since 1981 (NCIPC, 2002). Suicide among adolescents has increased dramatically for adolescents compared to the general population over the last four decades: between 1960 and 2000, the suicide rate among adolescents increased 128%, compared to 2% for the general population (Garland & Zigler, 1993; NCIPC, 2002).

Males commit suicide much more frequently than females. From 1981 to 2000, 82.6% of 15- to 19-year-olds who committed suicide were male. Among 15- to 19-year-old males, American Indians/Alaskan Natives have the highest suicide rate. Their 2000 suicide rate was about two to four times that of males ages 15-19 in other racial/ethnic groups (NCIPC, 2002) (Figure 14).

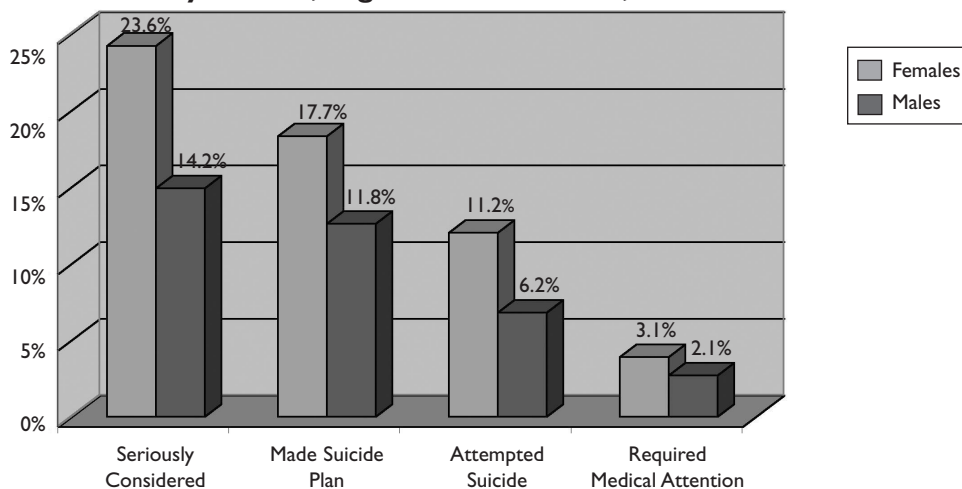
**Figure 14**

**Suicide Rates by Race/Ethnicity and Gender, Ages 15-19, 2000**



**Figure 15**

**Suicidal Ideation and Non-Lethal Behavior by Gender, High School Students, 2001**



Although adolescent males are more likely to commit suicide, their female peers are more likely to attempt suicide, as shown in Figure 15. In 2001, 11.2% of female students attempted suicide, compared to 6.2% of male students. This gender disparity holds true for all racial/ethnic groups, with the gender differences slightly larger for Hispanic and non-Hispanic White students (14.9% vs. 8.0% and 10.3% vs. 5.3%, respectively), compared to non-Hispanic Black students (9.8% vs. 7.5%). In 2001, 8.8% of students reported an attempted suicide in the past year, a small increase from 7.3% in 1991. Overall, 2.6% of high school students required medical attention due to a suicide attempt committed within the previous 12 months (YRBSS, 2001 – Grunbaum et al., 2002).

Despite considerable decreases over the last decade, suicidal ideation among adolescents is fairly common, particularly among females. In 2001, 19% of high school

students seriously considered a suicide attempt during the previous 12 months (23.6% of females vs. 14.2% of males). In 1991, by comparison, 29.0% of high school students seriously considered a suicide attempt (27.2% of females vs. 20.8% of males). In addition, about 14.8% of high school students reported having made a suicide plan (17.7% of females vs. 11.8% of males), compared to 18.6% in 1991 (24.5% of females vs. 12.5% of males). This gender difference in suicide ideation was identified for all grades and racial/ethnic groups (YRBSS, 2001 – Grunbaum et al., 2002).

Suicidal behavior has been related to mental health disorders including depression and adjustment or stress reactions (DHHS, 1999). Studies indicate that most adolescents who commit suicide have a psychiatric disorder (Shaffer et al., 1996). Currently, there are no national surveys that monitor trends in the mental health status of adolescents. However, the prevalence of mental health disorders can be estimated through national surveys, as well as through data from smaller studies. As noted earlier, the Surgeon General's Report on Mental Health estimates that nearly 21% of youths ages 9-17 have a diagnosable mental or addictive disorder associated with at least minimum impairment. Just over half of these youths (11% of all youths, or 4 million adolescents) have a disorder that results in significant impairment (Shaffer et al., 1996, as cited in DHHS, 1999). In addition, 5 - 9% of children ages 9-17 with more severe functional limitations are defined as having a "serious emotional disturbance" (Friedman et al., 1996, as cited in DHHS, 1999). Among the 18.5% of adolescents ages 12-17 who report receiving "treatment or counseling for emotional or behavior problems" in the prior year, the most common reasons for seeking treatment were "felt depressed" (44.9%); and "breaking rules or acting out" (22.4%) (NHSDA, 2001 – SAHMSA, 2002). About one in ten (10.2%) adolescents ages 12-17 (13.1% of males vs. 7.1% of females) have had a learning disability and 7.5% were reported to have had Attention Deficit Disorder (11.0% of males vs. 3.9% of females) (NHIS, 1998 – Blackwell & Tonthat, 2002).

## E. SUBSTANCE USE

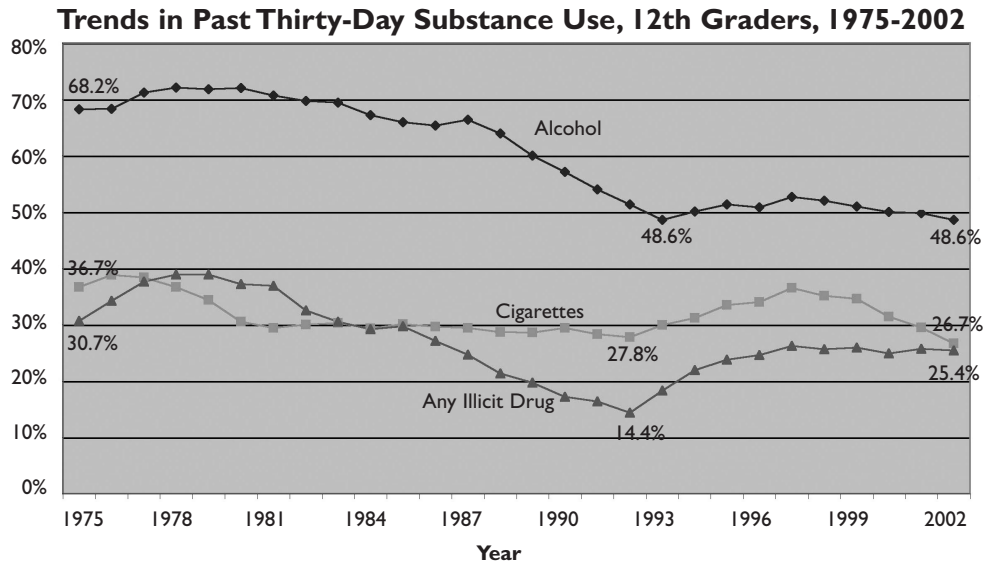
*Use of tobacco, alcohol and illicit drugs has decreased from the peaks of the late 1970s and early 1980s. Use of these substances increased after 1992 and has decreased or stabilized since 1997 (Figure 16). Black youths generally report the lowest levels of substance use. Rates of heavy substance use are a continuing concern: among 12th graders, almost 30% have engaged in binge drinking in the past two weeks, about 17% smoke cigarettes daily, almost 10% smoke a half-pack or more daily, and 6% use marijuana daily (Figure 17).*

### ■ Tobacco

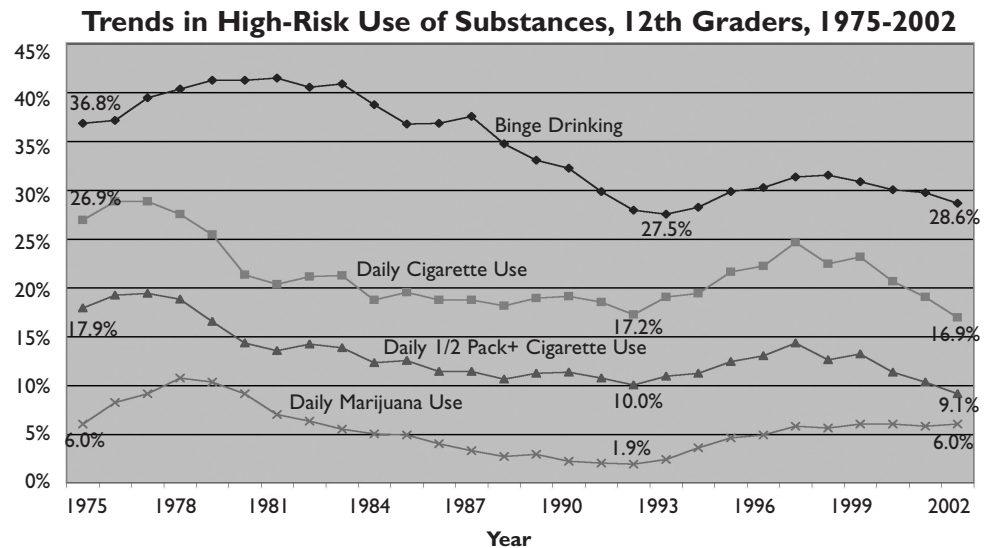
#### *Cigarettes*

Cigarette smoking among adolescents declined significantly in the late 1970s/early 1980s and remained relatively stable during the mid-1980s and the early 1990s. Smoking levels increased considerably until 1997 and decreased almost as considerably in the late 1990s. The percentage of 12<sup>th</sup> graders who reported smoking in the past 30 days decreased from a peak of 38.8% in 1976 to 26.7% in 2002 (Figure 16). Over the

**Figure 16**



**Figure 17**

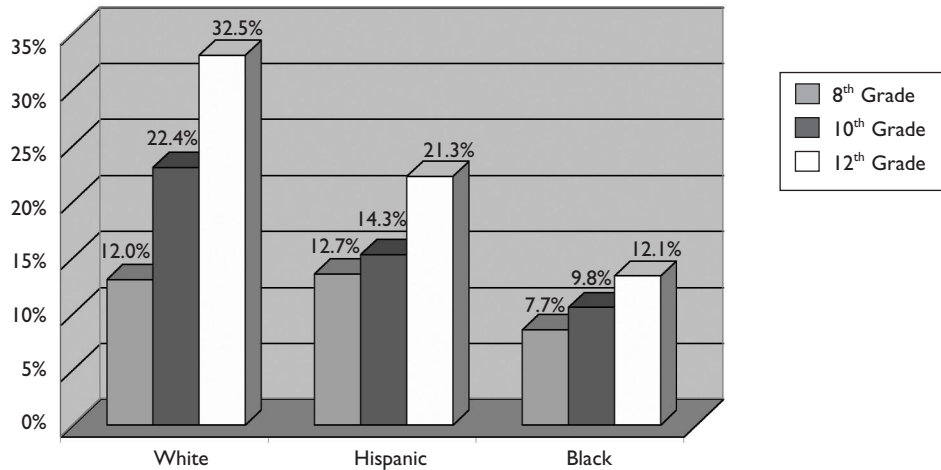


same period, the percentage of 12<sup>th</sup> graders who reported smoking a half-pack of cigarettes or more a day decreased from 17.9% to 9.1% (Figure 17) (MTF, 2002 – Johnston, O’Malley & Bachman, 2002c).

Initiation of smoking usually begins between grades 6 to 10: among 12<sup>th</sup> graders, 37.6% report having tried their first cigarette by 8<sup>th</sup> grade and 54% had tried a cigarette by 10<sup>th</sup> grade (MTF, 2001 – Johnston, O’Malley & Bachman, 2002a). About one in ten 8<sup>th</sup> graders (10.7%) report past-30-day smoking, compared to 17.7% of 10<sup>th</sup> graders and 26.7% of 12<sup>th</sup> graders. Among 12<sup>th</sup> graders, almost 16.9% smoke cigarettes daily and about one in ten (9.1%) smoke a half-pack or more daily (MTF, 2002 – Johnston et al., 2002c).

**Figure 18**

**Past Thirty-Day Cigarette Use by Race/Ethnicity and Grade Level, 2002**



While cigarette use varies little by gender, racial/ethnic disparities exist and change by grade, as shown in Figure 18. Among 8<sup>th</sup> graders, Whites and Hispanics report similar levels of smoking in the past 30 days (12.0% and 12.7%, respectively), while Blacks report the lowest levels (7.7%). By 12<sup>th</sup> grade, the gap between Whites and Hispanics widens (32.5% vs. 21.3%), while Blacks continue to smoke the least (12.1%) (MTE, 2002). Hispanic students tend to report the highest rates of substance use (including tobacco use) in 8<sup>th</sup> grade, while White students have the highest use among 12<sup>th</sup> graders. Higher dropout rates among Hispanic teens may explain this pattern. That is, more of those Hispanic adolescents likely to smoke may leave school before White and Black adolescents (Johnston et al., 2002a).

The National Household Survey on Drug Abuse (NHSDA)<sup>3</sup>—the only ongoing national substance use survey with data on non-Hispanic American Indian/Alaskan Native adolescents—indicates that non-Hispanic AI/AN adolescents have the highest rates of smoking. According to data from the 2001 NHSDA survey, 29.0% of 12- to 17 year-old non-Hispanic AI/AN youths smoked in the past month—a figure almost twice that of same-age non-Hispanic Whites (15.0%) and nearly three times that of same-age Hispanics (10.2%) (NHSDA, 2001 – SAMHSA, 2002).

### *Smokeless Tobacco*

The use of smokeless tobacco, which includes chewing tobacco and snuff, has fluctuated over the past 25 years. In 2001, levels were slightly lower than they had been in 1986. Overall, 8.2% of high school students reported current use of smokeless tobacco in 2001. Smokeless tobacco is used primarily by White, non-Hispanic males, with 18.9% of this population reporting use within the previous month (YRBSS, 2001 – Grunbaum, et al., 2002).

■ *Alcohol*

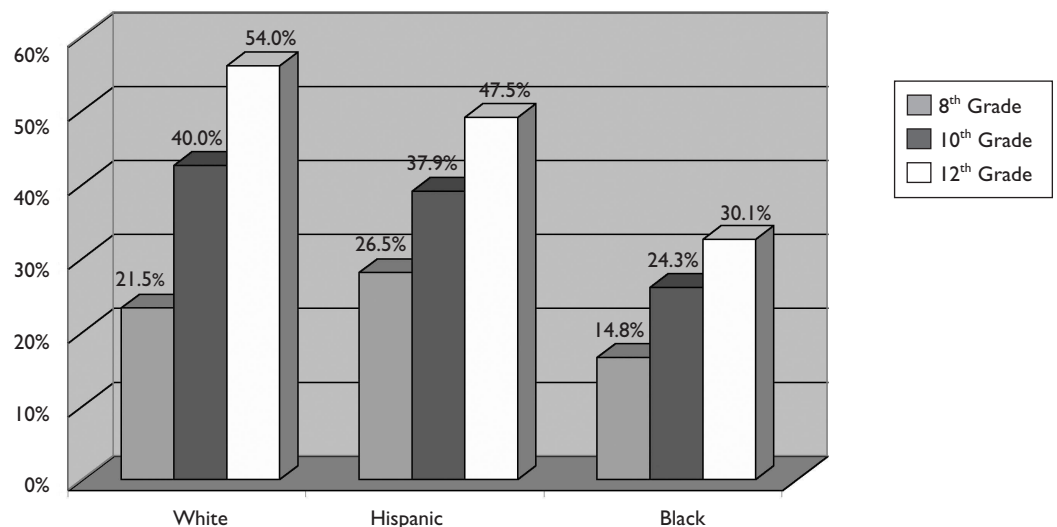
Alcohol use fluctuated slightly from the late 1970s to the mid-1980s, with a net decrease between 1975 and 1987, and then decreased more dramatically from 1987 to 1993. Levels of use crept up slowly until the mid-1990s and have decreased slightly since the late 1990s (Figure 16). The percentage of high school seniors who reported using alcohol in the past 30 days declined from 72.1% in 1979, to 66.4% in 1987, to a record low of 48.6% reached in 1993 and again in 2002 (MTF, 2002 – Johnston, O’Malley & Bachman, 2000b). Despite this reduction in monthly use, experimentation with alcohol is almost universal and regular alcohol use is still prevalent among teenagers. Almost four fifths (78.2%) of high school students have consumed alcohol in their lifetime (YRBSS, 2001 – Grunbaum et al., 2002) and about 30% of 12<sup>th</sup> graders report recent “binge drinking” (i.e., having 5 or more drinks on one occasion in the past two weeks) (MTF, 2002 – Johnston et al., 2002b).

Peak ages for initiation of alcohol use are between grades 7 and 10, with about 54% of 12<sup>th</sup> graders reporting that they first drank alcohol during these grades. Just over 15% of 12<sup>th</sup> graders reported that their first drink occurred in 6<sup>th</sup> grade or earlier (MTF, 2001 – Johnston et al., 2002a). Alcohol use increases with age. In 2002, about 20% of 8<sup>th</sup> graders reported drinking alcohol on at least one occasion during the previous 30 days, compared to 35% and almost 50% for 10<sup>th</sup> and 12<sup>th</sup> graders, respectively. Similarly, 12.4% of 8<sup>th</sup> graders reported recent binge drinking, a figure that increased to 22.4% among 10<sup>th</sup> graders and 28.6% among 12<sup>th</sup> graders (MTF, 2002).

Males are somewhat more likely than females to report both past-30-day alcohol use and recent binge drinking. Among 12<sup>th</sup> graders in 2002, 52.3% of males reported past-30-day use, compared to 45.1% of females. Similarly, 34.2% of 12<sup>th</sup> grade males reported recent binge drinking compared to 23.0% of females. These binge drinking figures compare to a 1980 high of 52.1% for males and a 1982 high of 31.1% for females (MTF, 2002; Johnston et al., 2002a).

**Figure 19**

**Past Thirty-Day Alcohol Use by Race/Ethnicity and Grade Level, 2002**



Analyses by race/ethnicity reveal an alcohol use pattern similar to that for cigarette smoking: differences between White and Hispanic students increase in higher grades and Black students report the lowest levels of use (Figure 19). The 2002 figures for binge drinking are particularly striking: among 8<sup>th</sup> graders, 17.8% of Hispanics and 12.7% of Whites reported this behavior, compared to only 9.4% of Blacks. Among 12<sup>th</sup> graders, Whites were most likely to report this behavior (33.7%), followed by Hispanics (26.4%) and Blacks (11.5%) (MTF, 2002).

### ■ *Illicit Drugs*

Illicit drug use by high school students declined steadily from the late 1970s until 1992; after this time, use of illicit drugs increased again to levels seen in the mid 1980s and has remained stable since 1997 (Figure 16). Changes in perceived risk associated with use of various illicit drugs paralleled these trends, with perceived risk decreasing a year before increases in actual use and, conversely, perceived risk increasing a year before decreases in actual use (Johnston et al., 2002b).

In 2002, 53% of high school seniors reported that they have used illicit drugs at some time in their lives and about 25% reported using an illicit drug in the past thirty days (MTF, 2002 – Johnston et al., 2002b). For virtually all drugs, Black seniors report lifetime and annual use at rates that are lower than same-age White and Hispanic rates. Hispanics have the highest use rate of almost all drugs in 8<sup>th</sup> grade. By 12<sup>th</sup> grade, White students report the highest rates of use for most drugs (Johnston et al., 2002a). Almost a third of students nationwide (32.1%) report being offered, sold, or given an illegal drug on school property (YRBSS, 2001 – Grunbaum et al., 2002).

### *Marijuana*

Most adolescents who report having used illicit drugs have used marijuana. In 2002, almost half (47.8%) of high school seniors reported using marijuana at some point in their lives, up from a record low of 32.6% reached in 1992. Similarly, about a fifth (21.5%) reported having used marijuana in the past 30 days, up from the 1992 low of 11.9%. About one in 17 seniors (6.0%) use marijuana on a daily basis. This compares to a peak of 10.7% seniors reporting daily marijuana use in 1978 and a record low of 1.9% in 1992 (MTF, 2002 – Johnston et al., 2002b).

Among 12<sup>th</sup> graders, 3.1% of students have tried marijuana by 6<sup>th</sup> grade or earlier and about a quarter report first using marijuana between 7<sup>th</sup> and 9<sup>th</sup> grades (MTF 2001 – Johnston et al, 2002a). Marijuana use increases with age, with 8.3% of 8<sup>th</sup> graders reporting use in the past 30 days, compared to 17.8% of 10<sup>th</sup> graders and 21.5% of 12<sup>th</sup> graders (MTF, 2002 – Johnston et al., 2002b).

Analysis by gender shows that males are somewhat more likely to use marijuana than females. Among 12<sup>th</sup> graders, 25.3% of males report marijuana use in the past thirty days compared to 17.4% of females (MTF, 2002). There are small racial/ethnic differences in past-month marijuana use, which change from grade to grade: among 9<sup>th</sup> graders in 2001, Hispanics reported higher use (12.6%) than Whites (8.4%) and Blacks (8.1%). By 12<sup>th</sup> grade, Whites and Hispanics reported virtually equal levels of past-month marijuana use (22.9% and 22.1%, respectively), while Blacks reported the lowest levels (17.0%) (MTF, 2002 – Johnston et al., 2002b).

### *Illicit Drugs Other than Marijuana*

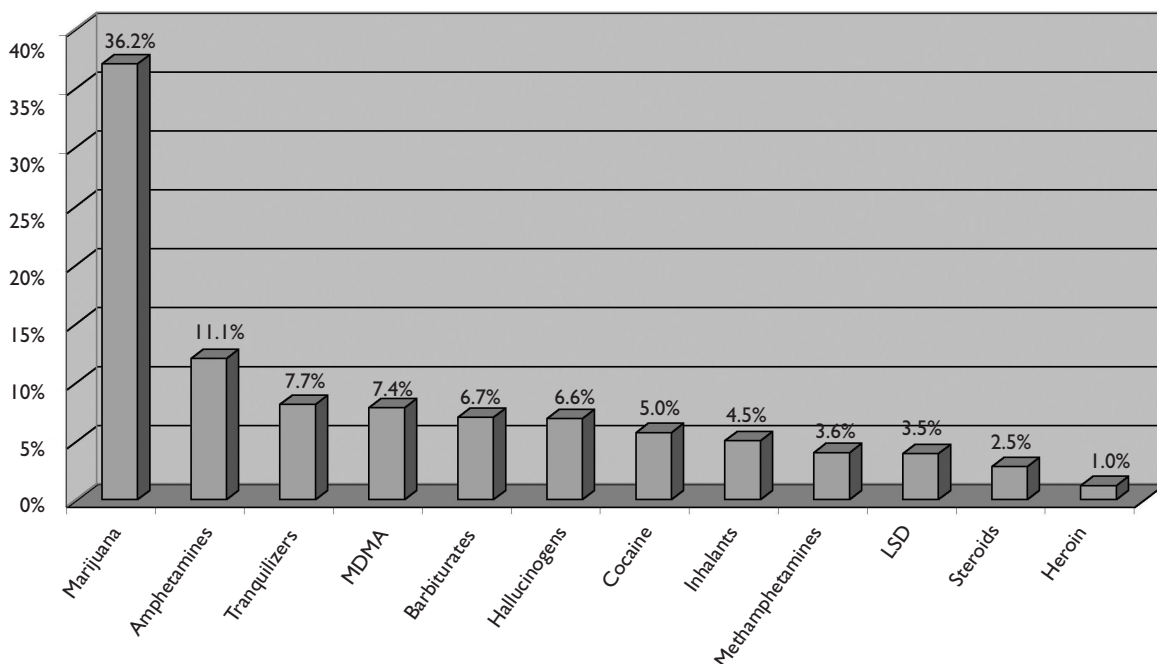
Use of illicit drugs other than marijuana has generally paralleled trends in marijuana use, declining steadily during the 1980s until 1992, rising again until 1997, and remaining fairly stable since then. In 2002, 20.9% of 12<sup>th</sup> graders reported using an illicit drug other than marijuana in the past year, down from the 1981 peak of 34% and up from the 1992 low of 14.9% (MTF, 2002 – Johnston et al., 2002b).

Although use of a particular illicit drug other than marijuana may fluctuate, overall use of these drugs changes more gradually (Johnston et al., 2002a). For example, methylenedioxy-methylamphetamine (MDMA or “Ecstasy”) is currently the fourth most commonly used illicit drug (after marijuana, amphetamines, and tranquilizers). Past-year Ecstasy use among 12<sup>th</sup> graders rose between 1996 and 2002, from 4.6% to 7.4%. Over the same period, past-year use of inhalants among 12<sup>th</sup> graders decreased from 7.6% to 4.5%. Overall, however, past-year use of illicit drugs other than marijuana remained virtually unchanged, with 19.8% of 12<sup>th</sup> graders reporting use in 1996 versus 20.9% in 2002 (MTF, 2002 – Johnston et al., 2002b).

As noted above, 2002 Monitoring the Future data show amphetamines are the second most commonly used illicit drug, with 11.1% of 12<sup>th</sup> graders reporting past-year use. Tranquilizers and Ecstasy follow, with 7.7% and 7.4% of 12<sup>th</sup> graders reporting use, respectively. Past-year sedative use (primarily barbiturates) was reported by 6.7% of 12<sup>th</sup> graders. Five percent or less of high school seniors currently report past-year use of cocaine (including crack cocaine), methamphetamines (including crystal methamphetamines or “ice”) and steroids (MTF, 2002 – Johnston et al., 2002b) (Figure 20).

**Figure 20**

**Past-Year Illicit Drug Use, 12th Graders, 2002**



Data from the 2001 NHSDA survey show a slightly different picture.<sup>3</sup> According to NHSDA, prescription-type drugs (i.e., pain relievers, tranquilizers, stimulants [including amphetamines], or sedatives) are the second most commonly used illicit drug after marijuana, with 7.9% of 12-17 year-olds reporting past-year use of these drugs in 2001. Inhalants were the next most commonly reported drug used, with 3.5% of 12-17 year-olds reporting past-year use (NHSDA, 2001 – SAMHSA, 2002).

## F. REPRODUCTIVE HEALTH

*Overall reproductive health trends over the past decade are positive. Young people are delaying sexual activity and those who are sexually active are more likely to use condoms. The past decade has witnessed a dramatic decline in adolescent pregnancy, birth and abortion rates. In addition, the prevalence of most sexually transmitted infections (STIs) has decreased. Trends that warrant continued concern include the wide prevalence of chlamydia, the relatively modest decline in pregnancy rates among Hispanic adolescents, and the continuing high rate of STIs among young Black women.*

### ■ Sexual Activity

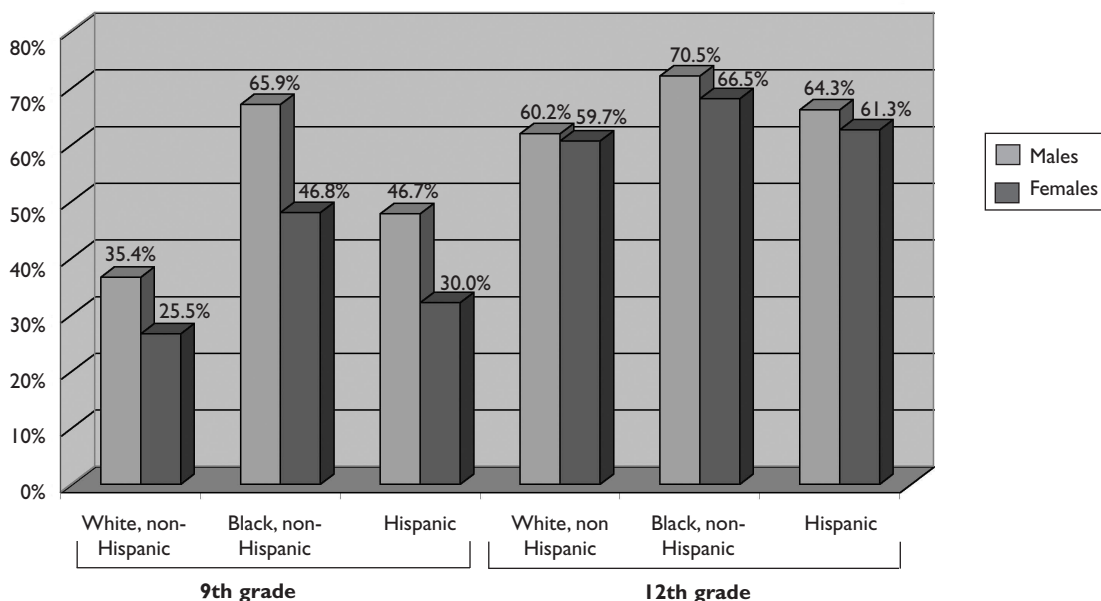
After two decades of increase, the proportion of adolescents who report having had sexual intercourse fell during the 1990s. About three fifths of high school seniors (60.5%) report having had intercourse at least once, compared to 66.7% in 1991, and 47.9% are currently sexually active (i.e., have had sex in the past three months), compared to 50.6% in 1991 (Brener et al., 2002). About three quarters (74.3%) of high school students who are sexually experienced are also currently sexually active (77.8% of females vs. 68.9% of males) (YRBSS, 2002a). About one fifth of seniors (21.6%) report having four or more sexual partners in their lifetime, down from 25.0% in 1991 (Brener et al., 2002).

In 2001, more than a third of 9<sup>th</sup> graders (34.4%) reported being sexually experienced. Males report earlier initiation of sexual activity, with females “catching up” by their senior year. Among 9<sup>th</sup> graders, 40.5% of males reported having had sexual intercourse, compared to 29.1% of females. By 12<sup>th</sup> grade these numbers were virtually identical—with 61.0% of males and 60.1% of females having had sexual intercourse (YRBSS, 2001 – Grunbaum et al., 2002).

These overall figures mask considerable differences in sexual activity among racial/ethnic groups. Non-Hispanic Blacks report first sexual intercourse at earlier ages. Almost two thirds (65.9%) of 9<sup>th</sup> grade non-Hispanic Black males have had sexual intercourse, compared to 46.7% of their Hispanic and 35.4% of non-Hispanic White peers. Similarly, among 9<sup>th</sup> grade females, 46.8% of non-Hispanic Blacks have had sexual intercourse, compared to 30.0% of Hispanics and 25.5% of non-Hispanic Whites (Figure 21) (YRBSS, 2002b). Overall, these figures have declined for all racial/ethnic groups. In 2001, 60.8% of non-Hispanic Black high school students reported being sexually experienced, a substantial decline from 81.4% in 1991. Their Hispanic and non-Hispanic White peers also experienced large declines over this period (53.1% to 48.4%, and 50.0% to 43.2%, respectively) (Brener et al., 2002).

**Figure 21**

**Sexual Intercourse Experience by Race/Ethnicity, Gender and Grade Level, 2001**



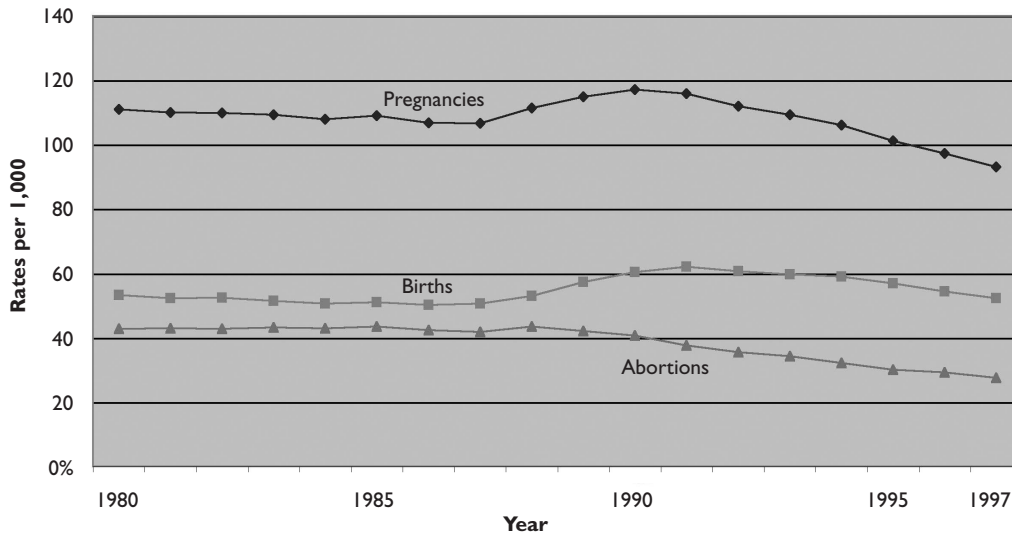
■ *Use of Contraception and Condoms*

The decline in sexual activity among adolescents has been accompanied by an increase in condom use. Among sexually active high school students, condom use at last intercourse rose from 46.2% in 1991 to 57.9% in 2001. Non-Hispanic Black students (67.1%) were more likely to report condom use than non-Hispanic White (56.8%) and Hispanic (53.5%) students. By contrast, sexually active non-Hispanic White students (23.4%) are two to three times more likely to report using oral contraceptive pills (OCPs) than their non-Hispanic Black and Hispanic peers (7.9% and 9.6%, respectively) (YRBSS, 2001 – Grunbaum et al., 2002).

Two large national surveys conducted in 1988 and 1995—the National Survey of Family Growth (NSFG) and the National Survey of Adolescent Males (NSAM)—provide data on a wider range of contraceptives (compared to the YRBSS focus on OCPs and condoms). These surveys show mixed trends in contraceptive use. Between 1988 and 1995, the percentage of females ages 15-19 reporting use of contraception at first intercourse rose from 66.9% to 76.6%, while same-age males experienced a fairly modest increase (71.4% to 75.7%). Over this same period, however, use of contraception at most recent intercourse fell from 79.9% to 70.7% among females, and 84.2% to 81.2% among males (Abma & Sonenstein, 2001). Thus, in 1995, about a quarter of adolescents were not protected from pregnancy at first intercourse and 20%-30% of sexually active youths were not protected at most recent intercourse. Looking at specific method use reported by females, NSFG data indicate that use of condoms and of long-acting methods (i.e., implants and injectables) increased between 1988 and 1995, while pill use decreased (Darroch & Singh, 1999).

**Figure 22**

**Trends in Pregnancy, Birth and Abortion Rates Among Females Ages 15-19, 1980-1997**



■ **Adolescent Pregnancy**

For the past decade, we have witnessed a substantial decline in adolescent pregnancy rates. About 870,000 teenagers became pregnant in 1997—a decrease from more than 1,000,000 in 1990. About 60% of these pregnancies occur among 18- and 19-year-olds (Henshaw, 2001). An analysis by the Alan Guttmacher Institute (AGI) indicates that about one in five sexually active adolescents becomes pregnant each year (Darroch & Singh, 1999).

The pregnancy rate (per 1,000) for females ages 15-19 fell from a 1991 peak of 116.5 to 94.3 in 1997—the lowest level since data collection began in 1976 (Ventura, Mosher, Curtin, Abma & Henshaw, 2001) (Figure 22, see endnote 4). The decline over this period was experienced by females ages 15-17 (whose rate fell from 80.3 to 63.7) and females ages 18-19 (whose rate fell from 162.4 to 141.7) (Ventura et al., 2001). The AGI analysis estimates that the pregnancy rate for sexually experienced adolescents ages 15-19 dropped from 211.8/1,000 to 197.1/1,000 between 1988 and 1995 (Darroch & Singh, 1999).

The decrease in pregnancy rates differs by race/ethnicity. Between 1991 and 1997, the pregnancy rates per 1,000 declined most markedly for non-Hispanic Black (from 221.3 to 170.4) and non-Hispanic White adolescents (from 87.4 to 65.1), while declines were more modest for Hispanic adolescents (155.8/1,000 to 148.7/1,000). As these figures indicate, non-Hispanic Black and Hispanic adolescents continue to become pregnant at rates two to three times that of non-Hispanic White adolescents (Ventura et al., 2001).

## ■ *Outcomes of Adolescent Pregnancy*

### *Births to adolescents*

The teen birth rate (per 1,000) has declined dramatically since 1991, following a steep rise in the late 1980s (Figure 22). For females ages 15-19, the rate fell from 62.1 in 1991 to 45.8 in 2001—a historic low for this age group. Over the same period, the rate for females ages 18-19—who account for about two thirds of births to females under age 20—fell from 94.4 to 75.5. For females ages 15-17 the rate fell from 38.7 to 25.2. The steepest declines in birth rates for females ages 15-19 occurred among non-Hispanic Blacks and non-Hispanic Whites, while the rates for Hispanic, Asian/Pacific Islander, and American Indian/Alaskan Native adolescents experienced relatively smaller declines (Martin et al., 2002).

In 2001 there were 445,944 births to adolescents ages 15-19, of which 17.8% represented second births. Although the largest number of births were to White, non-Hispanic teens (42.6%), the birth rate per 1,000 for non-Hispanic Whites ages 15-19 (30.0) is less than half that of Hispanic, non-Hispanic Black, and AI/AN adolescents (92.5, 75.6, and 66.0, respectively). Asian/Pacific Islander adolescents have the lowest birth rate (20.4) (Martin et al., 2002).

Out-of-wedlock births account for about four in five births (78.9%) to adolescents ages 15-19—a figure that varies significantly by race/ethnicity. Among children born to Black, non-Hispanic adolescents, 95.8% were born out of wedlock, compared to 74.0% and 72.1% for same-age non-Hispanic Whites and Hispanics, respectively (Martin et al., 2002).

Several risks—for both mother and child—are associated with adolescent childbearing. Compared to peers who delay childbearing, adolescent mothers are less likely to complete high school or have steady employment, and more likely to be on public assistance at some point in their lives. Risks for their children include lower birthweight, higher mortality rates, and poorer cognitive functioning and school performance (Ventura, Martin, Curtin & Matthews, 1997). Many of these social and health risks are also highly linked to socioeconomic status. Since most teens who become parents are poor, it is difficult to disentangle the effects of poverty from the effects of teen childbearing (Luker, 1996; Maynard, 1997).

### *Abortion*

In 1997, an estimated 254,000 adolescents ages 15-19 had abortions, accounting for almost one in five (19%) of all induced abortions in the U.S. that year. Almost half (44%) of these abortions were to White, non-Hispanic adolescents, although the abortion rate for White, non-Hispanic adolescents (18.2/1,000) was much lower than that for Hispanic (35.4/1,000) and non-Hispanic Black (62.7/1,000) adolescents. Adolescent abortion rates have fallen substantially over the last decade, from 40.3/1,000 in 1990 to 27.5/1,000 in 1997—a decline steeper than that for pregnancy and birth rates (Figure 22, see endnote 4). Over the same time period, the percentage of adolescent pregnancies ending in abortion declined from 40% to 21% (Ventura et al., 2001).

## ■ *Sexually Transmitted Infections*

Of the estimated 15 million new cases of sexually transmitted infections (STIs) reported annually in the U.S., about one quarter occur in adolescents (CDC, 2000). The prevalence of most STIs peaks during adolescence and young adulthood and then declines rapidly. Serious negative outcomes associated with STIs include, for females, pelvic inflammatory disease and associated chronic pelvic pain, tubal infertility, and ectopic pregnancy; and, for both males and females, genital cancers and infection with the human immunodeficiency virus (HIV) leading to Acquired Immune Deficiency Syndrome (AIDS). For both biological and behavioral reasons, adolescents are at greater risk for STIs than people in other age groups (Eng & Butler, 1997).

### *Chlamydia*

Chlamydia is the most prevalent of all STIs, with adolescents (ages 15-19) accounting for 37% of reported cases. While rates for most STIs are decreasing, chlamydia rates have increased since 1996, when national chlamydia data first became available for adolescents. These data indicate that chlamydia rates increased 33% for adolescents ages 15-19 between 1996 and 2001. Much of this increase may be due to more widespread chlamydia screening and increased use of more sensitive screening tests (STDS, 2001 – CDC, 2002a). Reported prevalence for females ages 15-19 is six times that of same-age males (2,547.2/100,000 vs. 383.9/100,000) (STDS, 2000 – CDC, 2001; STDS, 2001 – CDC, 2002a).

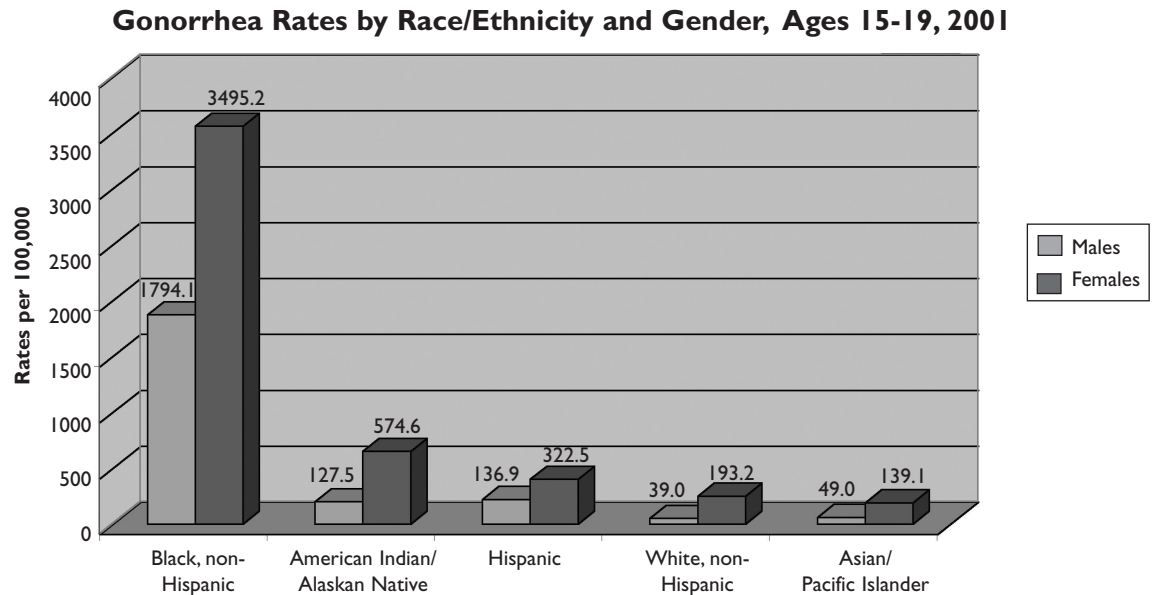
For females, the highest age-specific reported rates of chlamydia (per 100,000) in 2001 occurred among 15- to 19-year-olds (2,547.2) and 20- to 24-year-olds (2,466.9). Age-specific reported chlamydia rates among males, while substantially lower than the rates among females, were also highest in these same age groups (383.9 and 623.5). Non-Hispanic Black adolescents are disproportionately affected by STIs. With a rate of 4,975.3/100,000 among 15-19 year-olds in 2001, this population has a rate almost twice that of same-age American Indians/Alaskan Natives (2,522.4), three times that for Hispanics (1,547.1), and more than seven times the rate for non-Hispanic Whites (689.0) and Asians/Pacific Islanders (567.1) (STDS, 2001 – CDC, 2002a).

### *Gonorrhea & Syphilis*

After increasing during the 1980s, the rate (per 100,000) of gonorrhea in adolescents decreased during the early 1990s and has fluctuated since (STDS, 2000 – CDC, 2001; STDS, 2001 – CDC, 2002a). Gonorrhea infection is generally more prevalent in female adolescents and young adults, especially among non-Hispanic Black adolescents ages 15-19 (Figure 23). Among all age groups of women in 2001, 15- to 19-year-olds had the highest reported rates of gonorrhea (703.2), while among males, 20- to 24-year-olds had the highest rate (563.8). Although the incidence of gonorrhea among non-Hispanic Black adolescents declined in the 1990s, this group accounts for more than three-quarters of all reported cases. Among adolescents ages 15-19, Black, non-Hispanics experience gonorrhea at a rate of 2,635.3, a rate that is over seven times that of same-age American Indians/Alaskan Natives (346.3), over eleven times the rate for Hispanics (223.7), and over 23 times the rates for non-Hispanic Whites (114.3) and Asians/Pacific Islanders (93.2) (STDS, 2001 – CDC, 2002a). The prevalence of syphilis (primary &

secondary)—which is less common among adolescents than gonorrhea—decreased from 6.1 in 1996 to 1.9 in 2001 (STDS, 2000 – CDC, 2001; STDS, 2001 – CDC, 2002a). As with gonorrhea, Black female adolescents have higher rates of syphilis infection. With a rate of 13.3/100,000, non-Hispanic Black females ages 15-19 are six to 13 times more likely to be infected with syphilis than other same-age females (STDS, 2001 – CDC, 2002a).

**Figure 23**



### *HIV Infection & AIDS*

AIDS is relatively rare among adolescents and young adults: in 2001 there were 372 new cases reported for adolescents ages 13-19, and 1,461 new cases reported for young adults ages 20-24. Despite these low numbers, the incidence of AIDS is increasing among adolescents and young adults. Over one half (53%) of the reported HIV cases among adolescent males and one third (37%) of the cases among adolescent females results from sexual behavior. However, the large percentage of cases without an identified mode of HIV/AIDS transmission makes it difficult to interpret these figures<sup>5</sup> (CDC, 2002b).

According to 1996-1999 surveillance data from states that report HIV/AIDS cases, young people ages 13-24 account for a higher proportion of HIV cases (13%) than AIDS cases (3%). Because the incubation time between contracting the infection and the onset of AIDS is close to 10 years, many 20- to 29-year-olds with AIDS were infected with HIV during adolescence. Young adults between the ages of 20 to 29 currently comprise 15% of all AIDS cases among males and 21% among females (CDC, 2002b).

Among adolescents ages 13-19, females are as likely to become infected as males, comprising 57% of new HIV infections and 48% of new AIDS cases reported in 2001. Similarly, among young adults ages 20-24, men account for relatively fewer new HIV infections and newly reported cases of AIDS (just under 60% for each) than cumulative AIDS cases (71%) (CDC, 2002b). Black adolescents and young adults (ages 13-24) account for over half (53%) of all HIV cases ever reported for this age group (CDC, n.d.).

## G. PHYSICAL ACTIVITY, DIET, AND OBESITY

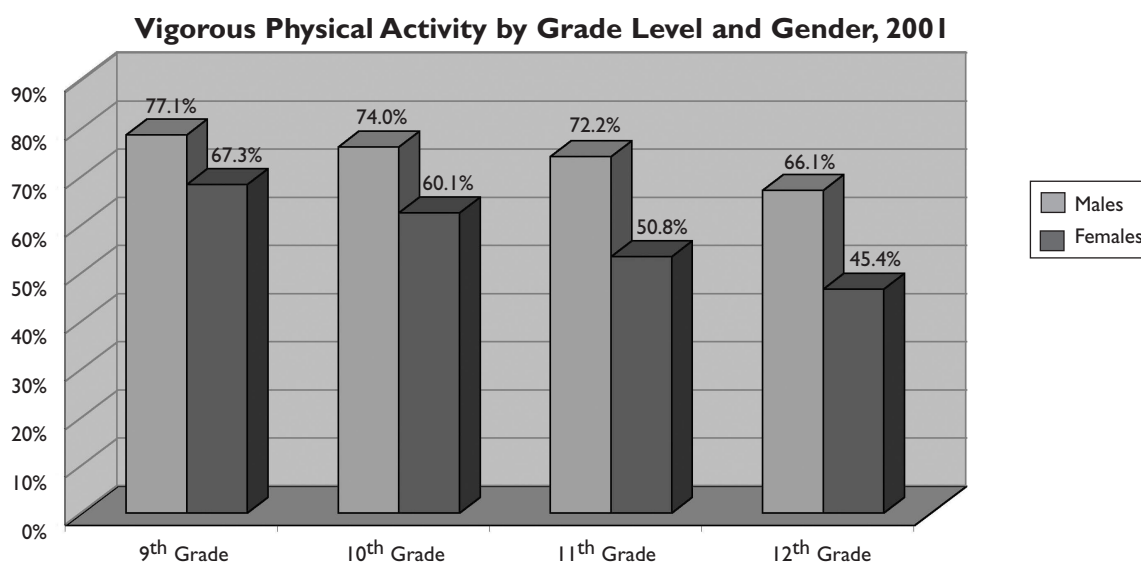
*This section examines behaviors which, for the most part, have a greater impact on the long-term health of adults. Highlighted trends include the substantial increase in obesity—a trend experienced by both males and females and all racial/ethnic groups over the past 25 years.*

### ■ Physical Activity

The many long-term benefits to regular physical activity include reduced risk for premature death, as well as physical health problems (e.g., heart disease, hypertension, certain cancers, and diabetes) and mental health conditions (e.g., depression, anxiety). Conversely, lack of exercise puts individuals at greater risk for these outcomes. More generally, regular physical activity is linked to improved mood (DHHS, 1996b).

In 2001, almost two thirds (64.6%) of high school students reported being physically active<sup>6</sup> three or more days per week. Students become less active as they get older: 71.9% of 9<sup>th</sup> graders reported being physically active, compared to 55.5% of 12<sup>th</sup> graders. About two thirds of non-Hispanic White students (66.5%) reported being physically active, slightly more than their Hispanic (60.5%) and non-Hispanic Black peers (59.7%). Males (72.6%) were more likely to report being physically active than females (57.0%). The gender difference is most pronounced among non-Hispanic Blacks: in 9<sup>th</sup> grade, 86.4% of males in this population reported this behavior versus 65.6% of females. By 12<sup>th</sup> grade, these figures were 78.9% and 52.6%, respectively (Figure 24) (YRBSS, 2002b). Reported levels of physical activity have changed little since 1993, the first year these data were collected (Kann et al., 1995).

**Figure 24**



■ *Diet*

Diets that are high in saturated fats and low in vegetables and fruits constitute a significant risk factor for health problems including coronary heart disease, cancer, stroke, and diabetes (Frazao, 1999). The majority of high school students reported eating a diet low in fat (62.3% in 1997). Females (70.6%) were significantly more likely than males (55.5%) to report eating a low-fat diet in the previous day. Black, non-Hispanic students (54.9%) were less likely to eat a low-fat diet than their White, non-Hispanic (62.9%) and Hispanic (63.8%) peers (YRBSS, 1997 – Kann et al., 1998). In 2001, only one fifth (21.4%) of students, however, reported eating five or more servings of fruits and vegetables in the previous day, an increase from 15.4% in 1993. These figures vary little by gender and race/ethnicity (YRBSS, 1993 – Kann et al., 1995; YRBSS, 2001 – Grunbaum et al., 2002).

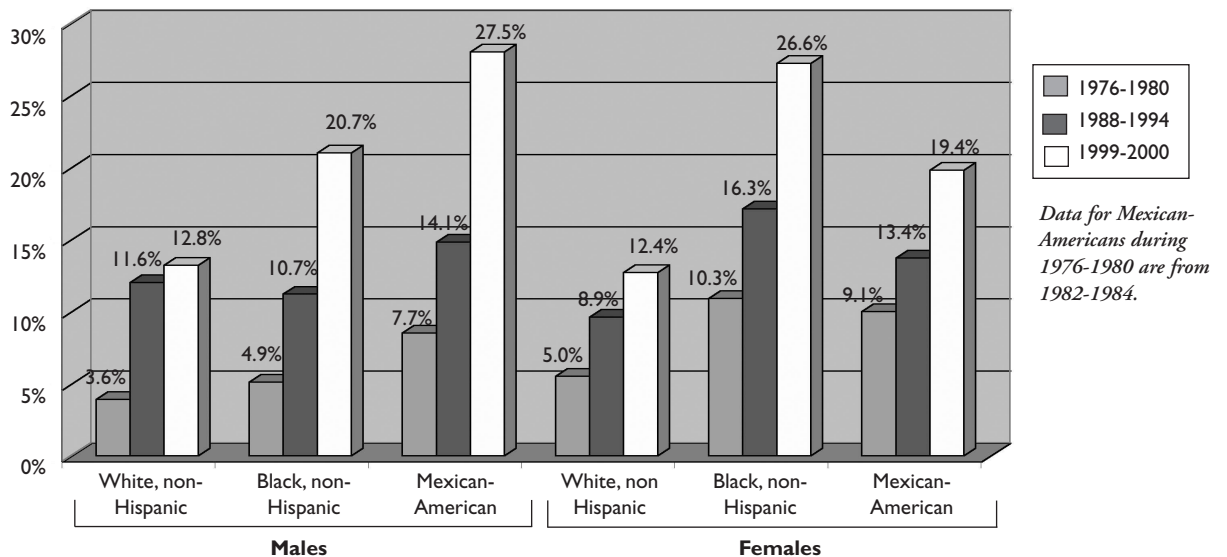
■ *Obesity*

Obesity<sup>7</sup> has been linked with numerous health problems including premature death, heart disease, hypertension, high cholesterol, stroke, diabetes, cancer, osteoarthritis, sleep apnea, asthma, breathing problems, increased surgical risk, and depression. Adolescents who are overweight are more likely to become overweight or obese as adults (DHHS, 2001). The percentage of adolescents who are overweight has increased considerably over the last 25 years, according to the National Health and Nutrition Examination Survey (NHANES) (Figure 25). During the 1976-1980 survey period, 5% of adolescents ages 12-19 were overweight, a figure that increased to 11% during the 1988-94 survey period and 14% in 1999 (NHANES, 2002). Data from the 1999-2000 NHANES survey show no gender difference in overweight status for youths ages 12-19 (15.5% for both sexes, together and separately). However, Mexican-American males ages 12-19 are the most likely to be overweight (27.5%), followed by Black, non-Hispanic females (26.6%) and Black, non-Hispanic males (20.7%) (NCHS, 2002b).

Analyses of 1988-1994 NHANES data among females revealed racial/ethnic differences in risk for cardiovascular disease. In addition to their higher body mass index<sup>7</sup>

**Figure 25**

**Trends in Overweight by Race/Ethnicity and Gender, Ages 12-19, 1976-2000**



relative to their White peers, Black and Mexican-American girls ages 6-24 had higher dietary fat. In addition, blood pressure levels were higher for Black girls ages 6-24 than for their White and Mexican-American peers (Winkleby, Robinson, Sundquist & Kraemer, 1999).

Although obesity has serious health implications, unhealthy weight loss behaviors can also have damaging effects. The health consequences can be immediate as well as long-term, including increased risk for eating disorders and obesity (French et al., 2001; Boutelle, Neumark-Sztainer, Story & Resnick, 2002). In 2001, 59.9% of students (68.4% of females and 51.0% of males) exercised to lose weight or avoid gaining weight in the month prior to the survey; 43.8% (58.6% of females and 28.2% of males) ate less food, fewer calories, or foods low in fat to lose weight or avoid gaining weight. The extent of diet pill use and laxative use or vomiting warrants concern. Among females in particular, 12.6% report diet pill use and 7.8% report taking laxatives or vomiting. Additionally, non-Hispanic White females were more likely to engage in all weight loss behaviors than their Hispanic and non-Hispanic Blacks peers (YRBSS, 2001 – Grunbaum et al., 2001). An estimated 5% to 10% of postpubertal girls report some symptoms of anorexia nervosa or bulimia nervosa (Skiba et al., 1997, as cited in Irwin et al., 2002).

## **H. RISKY BEHAVIOR AMONG SPECIAL POPULATIONS**

National studies of risky behaviors among adolescents typically reflect adolescents in school.<sup>8</sup> By not including out-of-school youths, these studies may underestimate the prevalence of certain risky behaviors. For example, an analysis of the 1995 NSAM shows that 64% of out-of-school males engaged in two or more risky behaviors, compared to only 40% of in-school males (Lindberg, Boggess, Porter & Williams, 2000).

While recent national data for all adolescents are not available, it is worth highlighting findings from the 1992 National Health Interview Survey, which compared the prevalence of risky behaviors between in-school and out-of-school adolescents. The findings indicate that adolescents who are not in school have greater risks to their health than adolescents who are attending school (CDC, 1994).

Out-of-school adolescents between the ages of 12 and 19 are more likely than those in school to report recently riding with a driver who had been drinking alcohol (28.4% vs. 18.9%), involvement in a physical fight in the past year (51.0% vs. 44.2%), and having carried a weapon in the past 30 days (22.9% vs. 15.5%). They were also significantly more likely than in-school adolescents to have ever smoked cigarettes (57.7% vs. 50.9%), to have recently smoked cigarettes (33.7% vs. 20.4%), and to have used alcohol (62.9% vs. 55.2%), marijuana (31.4% vs. 15.9%), and cocaine (7.1% vs. 2.1%). Out-of-school adolescents between the ages of 14 and 19 are more likely to report having ever had sexual intercourse (70.1% vs. 45.4%), and to have had 4 or more sexual partners (36.4% vs. 14.0%) (CDC, 1994).

In addition, several smaller studies have examined special populations of youth, including runaways, the homeless, immigrants, juvenile offenders, and adolescents in foster care. Significantly higher rates of suicide attempts have been documented for youth who are incarcerated, disabled, chronically ill, learning disordered, emotionally disordered, homeless, runaways, or homosexual (Knopf et al., 2003).

These findings highlight the special challenges faced by certain populations of adolescents, including many out-of-school youths, and point to the importance of providing prevention services for these populations.

<sup>1</sup>. It is unknown whether seat belts were used in 8% of fatal and non-fatal MVAs (NHTSA, 2001).

<sup>2</sup>. Serious violent crime includes rape/sexual assault, robbery, and aggravated assault.

<sup>3</sup>. Two major surveys that monitor illicit drug use—The National Household Survey on Drug Use (NHSDA) and Monitoring the Future (MTF)—differ slightly in the drugs that each monitors. NHSDA reports lower levels of substance use than MTF (SAMHSA, 2002). See Appendix A.

<sup>4</sup>. Figure 22 presents pregnancy and abortion rates calculated by the Alan Guttmacher Institute (AGI) (Henshaw, 2001). The pregnancy rates presented in the text (by racial/ethnic breakdowns) were calculated by the National Center for Health Statistics (NCHS) (from Ventura et al., 2001). The NCHS and AGI data differ just slightly and both indicate similar trends.

<sup>5</sup>. The mode of exposure to HIV is not reported or identified for 44% of males and 57% of females ages 13-19.

<sup>6</sup>. Being physically active is defined as engaging in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.

<sup>7</sup>. Body Mass Index, expressed as weight/height<sup>2</sup> (BMI, kg/m<sup>2</sup>), is used to classify overweight and obesity among adults, and is also recommended to identify children who are overweight or at risk of become overweight. Cutoff criteria are based on CDC's BMI-for-growth charts for the United States. Based on current recommendations of expert committees, children with BMI values at or above the 95th percentile of the sex-specific BMI growth charts are categorized as overweight (NHANES, 2002).

<sup>8</sup>. Almost all (96%) adolescents ages 14-17 are enrolled in school (Snyder & Hoffman, 2002).

# V.

## MULTIPLE RISK-TAKING

The risky behaviors described in the previous section do not occur in isolation from one another. Rather, risky behaviors co-occur among adolescents. For example, a considerable body of research has established links between adolescent substance use and other risky behaviors. More than a quarter (26.0%) of adolescents who report serious fighting at school or work have used alcohol in the past month. By contrast, only 13.9% of “non-fighters” report past-month alcohol use. Similarly, those who report serious fighting are more than twice as likely to report past-month illicit drug use than “non-fighters” (17.9% vs. 7.4%) (NHSDA, 2001).

The use of alcohol and illicit drugs is also associated with sexual behaviors that place adolescents at increased risk for unintended pregnancy and sexually transmitted diseases. A number of studies have linked substance use with increases in sexually transmitted diseases including syphilis, gonorrhea, and HIV (Marx, Aral, Rolfs, Sterk & Kahn, 1991; Hibbs & Gunn, 1991, as cited in Igra & Irwin, 1994). The prevalence of sexual risk behaviors, such as multiple sex partners and not using condoms, was lowest among students who reported no substance abuse, increased among students who used alcohol or cigarettes, and was greatest among those students who used marijuana, cocaine, or other drugs (Lowry et al., 1994).

Substance use is also related to unintentional injury. Research has found links between adolescent use of tobacco or other drugs and becoming drunk, and lower use of seat belts and greater likelihood of other risky vehicle use (Reviewed in Elliott, 1993). Finally, as noted earlier, alcohol use is implicated in motor vehicle accident mortality, the largest single cause of death for adolescents, with 28.7% of MVA deaths among youths ages 16-20 involving alcohol.

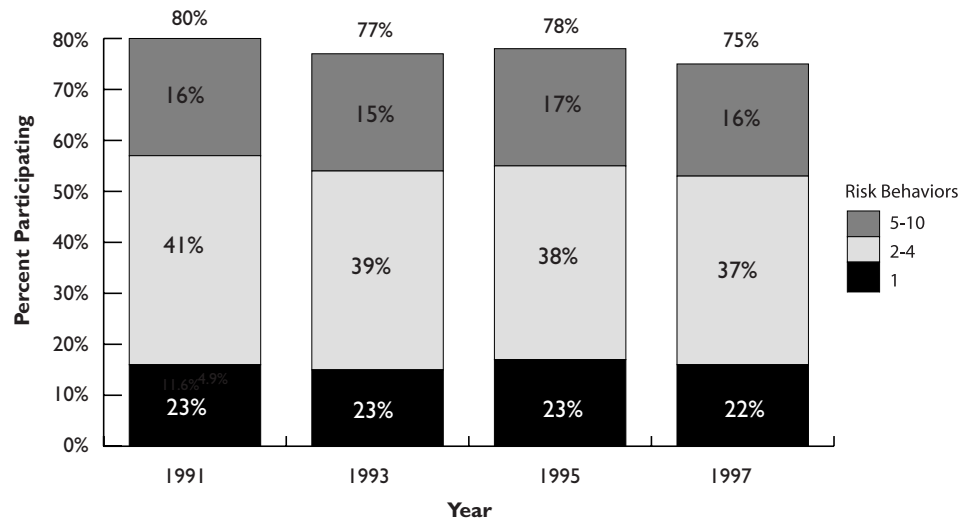
### A. PREVALENCE OF MULTIPLE RISK-TAKING

The majority of adolescents do not engage in multiple risk-taking. According to an analysis of the National Longitudinal Survey of Adolescent Health (“AddHealth”) data (Wave I, 1994-96) by researchers from the Urban Institute, nearly half of all adolescents (44%) engaged in no risky behaviors<sup>1</sup>; about a quarter (26%) engaged in one risky behavior; another quarter (24%) engaged in two to four behaviors; and 5% engaged in five or more behaviors (Lindberg et al., 2000). Older adolescents are more likely to engage in multiple risky behaviors (Lindberg et al., 2000; Brener & Collins, 1997). Boys are more likely than girls to engage in two or more risky behaviors (31% vs. 26%), a difference most pronounced among 11<sup>th</sup> and 12<sup>th</sup> graders (42% vs. 29%). Racial/ethnic differences are much smaller by comparison (Lindberg et al., 2000). Looking at YRBSS data from 1991

to 1997, the Urban Institute analysis also found that fewer adolescents overall are engaging in multiple risky behaviors (Figure 26). This trend was driven primarily by an increase in the percentage of students participating in no risky behaviors and a decline in the percentage participating in two to four risky behaviors. Analysis by race/ethnicity shows that Hispanic adolescents generally experienced fewer declines compared to non-Hispanic White and non-Hispanic Black adolescents. Most troubling is the substantial increase in the percentage of Hispanic youths engaging in five or more risky behaviors—from 13% to 19% from 1991 to 1997 (Lindberg et al., 2000).

**Figure 26**

**Number of Risky Behaviors Among High School Students, 1991-1997**



## B. ANTECEDENTS OF RISK-TAKING

Risky behaviors among adolescents co-vary or cluster in predictable ways. Research also suggests that substance use follows a predictable developmental progression (reviewed by Elliott, 1993). The use of alcohol and tobacco often occurs before the use of marijuana, and is followed by the use of other illicit substances, such as cocaine, psychedelics, heroin, and other non-prescribed stimulants, sedatives, and tranquilizers. The initiation of sexual behavior typically occurs after the use of marijuana, and before the use of illicit drugs (Kandel, Kessler & Margulies, 1978; Kandel & Yamaguchi, 1985, as cited in Elliott, 1993).

A number of theories have been developed that attempt to explain the common factors underlying the association among risky behaviors. The “problem behavior theory” of Jessor and colleagues (e.g., Jessor & Jessor, 1977) is based on the premise that problem behaviors should be seen as purposeful, meaningful, goal oriented, and functional rather than arbitrary or perverse. As such, problem behaviors in adolescence can be instrumental in gaining peer acceptance and respect; establishing autonomy from parents; repudiating the norms and values of conventional authority; coping with anxiety, frustration and the anticipation of failure; confirming for self and significant others certain attributes of identity;

and affirming maturity and marking a transition out of childhood and toward a more adult status (Jessor, 1991, as cited in Igra and Irwin, 1995). An adolescent's "psychosocial proneness," the interaction among an adolescent's personality, environmental system, and behavior, is a useful predictor of engagement in problem behavior (Jessor, Donovan & Costa, 1991). This concept of "psychosocial proneness" suggests that adolescents who engage in one type of risk behavior are also likely to engage in other types.

The "biopsychosocial model" of risk-taking behavior suggests that there are biological, psychological, and social factors that contribute to the propensity toward risk behaviors (Irwin, Igra, Eyre & Millstein, 1997). Specific biological variables include pubertal timing, hormonal effects, and genetic predisposition. For example, a number of studies have noted that earlier maturing girls are more likely to initiate sexual activity than their age-matched peers (Phinney, Jensen, Olsen & Cundick, 1990; Shafer et al., 1984). Psychological factors include self-esteem, sensation seeking, and cognitive and emotional states. Social factors include the roles that peers, parents, and school play in the adolescent's life. Consistent with problem behavior theory, this model also assumes that risk-taking behaviors may evolve over time and fulfill developmental needs such as autonomy, mastery and intimacy.

The AddHealth survey has provided new opportunities to analyze the relationships among risky behaviors as well as the relationships between environmental contexts and specific profiles (or clusters) of risky behaviors. For example, a recent study examined several different profiles of risky behaviors<sup>2</sup> (Zweig, Phillips & Lindberg., 2002). The study analyzed factors in adolescents' lives (both positive and risk factors) associated with each of these profiles studied. Overall, the study found that adolescents with the lowest profiles of risky behavior reported higher levels of protective factors in the areas of psycho-social adjustment, family, and school (e.g., using measures of decision-making competency, sense of self-worth, close relationship with parents, and connectedness to school). Two of the profiles examined include (1) high levels of suicidal thoughts and behaviors and (2) the highest profile of risky behavior. These two groups reported poorer psycho-social adjustment and less parental closeness than adolescents in the lowest risk group and the moderate risk group (Zweig et al., 2002). These and other findings from this analysis can strengthen efforts to identify adolescents at risk and better tailor prevention efforts.

### **C. POSITIVE BEHAVIOR**

According to the Urban Institute analysis described above, the vast majority of students (92%) engage in some positive behavior.<sup>3</sup> While low risk-takers were most likely to report positive behaviors, more than four fifths (81%) of high risk-takers (i.e., 5+ risky behaviors) engaged in at least one positive behavior and almost half (49%) engaged in at least two positive behaviors. The analysis also found relatively small differences by demographic factors in the occurrence of positive behavior (Lindberg et al., 2000). These findings show that young people of all backgrounds engage in pro-social behaviors—behaviors that connect young people to their families and other societal institutions that have the potential to foster healthy development.

- <sup>1</sup>. This study examined the following risky behaviors: seatbelt use, weapon carrying, tobacco, alcohol and other drug use, and sexual behavior.
- <sup>2</sup>. This study examined the following risky behaviors: regular alcohol use, regular binge drinking, regular tobacco use, marijuana use, cocaine use, physical fighting, weapon carrying, suicidal thoughts, suicide attempt, and sexual intercourse.
- <sup>3</sup>. Positive behaviors examined include: school activities, good grades, school sports, religious involvement and family involvement.

# VI.

## COMMENT AND SUMMARY

Many of the health problems of adolescents have their origins in environmental and behavioral factors. Current demographic trends include an increase in the number of adolescents who live in single-parent families, and an increase in the proportion of Hispanic and Asian adolescents. While the majority of adolescents have access to needed health care, a large minority face significant barriers to gaining access to the comprehensive set of services that they require to develop into healthy adults.

The data presented indicate that the majority of adolescent morbidity and mortality can be attributed to preventable risk factors. These include risky vehicle use, violent behavior, substance use and abuse, premature and unsafe sexual practices, sedentary lifestyle, and poor nutritional habits. These same behaviors also contribute to the leading causes of adult morbidity and mortality. Focusing on adolescent health gives us the opportunity to prevent the initiation of health damaging behaviors, as well as intervene with risky behaviors before they are firmly established (Millstein, Petersen & Nightingale, 1993; Park et al., 2001; Ozer et al., 2001). Thus, adolescence offers the opportunity to promote a lifetime of health.

Adolescents' engagement in risky behaviors is influenced by the context in which they live. While no studies currently monitor ongoing changes in contexts, research has advanced our understanding of how context influences adolescent health and well-being. For example, analyses of the AddHealth study found that young people who feel a strong sense of connectedness to their parents and/or other family members typically demonstrate a lower frequency of engaging in risky behavior, including use of tobacco, alcohol, and other substances. In addition, adolescents who have problems with schoolwork and who have substantial unstructured leisure time are more likely to engage in risky behaviors. The study also found that adolescents are at increased risk for suicide, involvement in interpersonal violence, and substance use in homes with easy access to guns, alcohol, tobacco, or drugs (Resnick et al., 1997).

These findings suggest that improving adolescent health requires engaging the many individuals and institutions that shape adolescents' lives. Strategies that involve multiple influences—such as schools, media, communities, families, and health care settings—are more likely to succeed. Policies such as legislation to restrict adolescents' access to cigarettes, alcohol, and guns also hold promise for creating healthy environments for adolescents (Elster, 1994; Trauma Foundation, 1998; Reich, Culross & Behrman, 2002). Declines in motor vehicle accidents, the single leading cause of death for adolescents, can be attributed to multiple influences. Motor vehicle accidents involving adolescents have been reduced by up to a third in states that have instituted graduated driving licensing policies which add intermediate stages (e.g., restrictions on night driving and

passenger carrying, and increased practice requirements) between a learning permit and full licensure (McKnight & Peck, 2002). At the family level, research suggests that greater parental monitoring and management of adolescent drivers can reduce crashes (Simons-Morton, Hartos & Leaf, 2002). Reductions in drunk driving resulted from multiple interventions that delivered consistent messages designed to change social norms about drunk drivers, and supported these messages with new legal sanctions (Millstein et al., 1993).

Our prevention efforts must recognize that many adolescents engage in risky behaviors at an early age. For example, alcohol use frequently begins between ages 12 and 14, smoking begins between 11 and 15, marijuana use begins at about age 14, and about one third of adolescents report having had sexual intercourse by age 14 or 15. Figures for specific demographic groups warrant special concern: for example, among 9<sup>th</sup> graders, 17.6% of Hispanics and 13.8% of non-Hispanic Whites report recent binge drinking, and almost two thirds (65.9%) of non-Hispanic Black males have had sexual intercourse.

Although early initiation of risky behaviors is of concern, the data provided here reveal many positive trends. First, overall death rates among young adolescents, older adolescents, and young adults are on a downward trend and are at or near historical lows for all racial/ethnic groups. Second, there has been a decrease in many risky behaviors among adolescents. The use of drugs, alcohol, and cigarette use are well below peaks of the late 1970s and early 1980s, and have stabilized or declined after rising in the mid-1990s. Other positive trends include the decrease in violence and the consistent decrease in rates of pregnancy, birth, gonorrhea, and syphilis among adolescents over the last decade.

Improving adolescent health requires multiple strategies. While primary prevention efforts—such as those promoting abstinence from sexual behavior and substance use—are essential, it is not realistic to assume that engagement in high risk behaviors among adolescents will cease entirely. Secondary prevention that involves realistic safety strategies is important to the health of adolescents who engage in risky behaviors despite our health promotion efforts. Adolescents who use alcohol, or who are in situations where alcohol is being used, need strategies to extricate themselves from high-risk situations by using the designated driver approach to discourage drinking and driving. Similarly, sexually active teenagers need to be encouraged to use condoms to prevent pregnancy, STIs, and HIV infection. For teens who have had unprotected sex, emergency contraception is an important tool for preventing unintended pregnancy.

Research and monitoring also play a critical role in promoting adolescent health. It is essential to remain diligent in monitoring trends in key indicators of adolescent health so that we can be responsive to troubling trends and adopt policies to reinforce promising trends. Over the last decade, researchers have made tremendous progress in understanding the individual and contextual factors associated with risky behaviors among adolescents. More longitudinal research would help researchers and policymakers to develop more effective interventions to foster individual assets (Irwin & Duncan, 2002; Eccles & Gootman, 2002; Millstein et al., 2000). Further research on healthy adolescent development is needed (Millstein et al., 2000). Such research could inform policies and programs to help adolescents transition into adulthood successfully and help differentiate between healthy experimentation and unhealthy risk-taking (Eccles & Gootman, 2002; Burt, 2002).

We know that it is possible to decrease adolescent morbidity and mortality and promote healthy development. We also have a strong foundation of interdisciplinary knowledge in the area of health promotion and prevention. An environment that promotes adolescent health and fosters positive development requires the participation of adolescents, families, schools, the health care system, and communities (Burt, 2002, Halpern-Felsher, Millstein, & Irwin, 2002; Brindis et al., 1997; Grantmakers in Health, 2002). Federal, state, and community policies should guide and reinforce these efforts. The future needs to be one in which each system that interacts with adolescents assumes responsibility for the health of our youth (Irwin et al., 2002; Mortimer & Larson, 2002).



# VII.

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# VIII.

## APPENDIX A. Data Sources for Monitoring Adolescent Health

Name of Data Source (Abbreviation) Sponsor Website	Data Source	Type of Data Collected	Sample	Periodicity
<b>DATA COLLECTED BY THE CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)</b>				
<b>HIV/AIDS Surveillance</b> CDC, National Center for HIV, STD and TB Prevention, Division of HIV/AIDS Prevention <a href="http://www.cdc.gov/hiv/dhap.htm">http://www.cdc.gov/hiv/dhap.htm</a>	Surveillance	HIV and AIDS Cases	AIDS cases reported to CDC by 50 states and DC; HIV cases reported by 38 states & DC	Ongoing surveillance, bi-annual publication
<b>National Health and Nutrition Examination Survey (NHANES)</b> CDC, National Center for Health Statistics <a href="http://www.cdc.gov/nchs/nhanes.htm">http://www.cdc.gov/nchs/nhanes.htm</a>	Interview, physical examination, clinical measurements and test	Diet, obesity & overweight, oral health	National probability sample	8 surveys since 1960, most recent in 1999
<b>National Health Interview Survey (NHIS)</b> CDC, National Center for Health Statistics <a href="http://www.cdc.gov/nchs/nhis.htm">http://www.cdc.gov/nchs/nhis.htm</a>	Personal household interview	Health status, access to and utilization of health services, insurance, and health-related behaviors	Nationally representative sample of households	Annually since 1957
<b>National Hospital Discharge Survey (NHDS)</b> CDC, National Center for Health Statistics <a href="http://www.cdc.gov/nchs/about/major/hdasd/nhds.htm">http://www.cdc.gov/nchs/about/major/hdasd/nhds.htm</a>	Medical records	Demographics, diagnoses and procedures	National sample of short-stay hospitals	Annually since 1965
<b>National Survey of Family Growth (NSFG)</b> CDC, National Center for Health Statistics <a href="http://www.cdc.gov/nchs/nsfg.htm">http://www.cdc.gov/nchs/nsfg.htm</a>	Personal interview	Factors affecting pregnancy and women's health	Nationally representative sample of women ages 15-44	1973, 1976, 1982, 1988, 1990, 1995
<b>National Vital Statistics System (NVSS)</b> CDC, National Center for Health Statistics <a href="http://www.cdc.gov/nchs/nvss.htm">http://www.cdc.gov/nchs/nvss.htm</a>	Birth and death certificates	Mortality and Natality	All births and deaths	Annually since 1950

Name of Data Source (Abbreviation) Sponsor Website	Data Source	Type of Data Collected	Sample	Periodicity
<b>Sexually Transmitted Disease Surveillance (STDS)</b> CDC, National Center for HIV, STD and TB Prevention, Division of Sexually Transmitted Diseases <a href="http://www.cdc.gov/std/">http://www.cdc.gov/std/</a>	Surveillance	Sexually transmitted diseases	STD surveillance systems operated by state and local STD control programs	Ongoing surveillance, annual publication
<b>Youth Risk Behavior Surveillance System (YRBSS)</b> CDC, Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion <a href="http://www.cdc.gov/nccdphp/dash/yrbbs/">http://www.cdc.gov/nccdphp/dash/yrbbs/</a>	Questionnaire administered in schools	Risky behaviors	Nationally representative sample of students in grades 9 to 12	First year: 1990, every other year beginning in 1991
<b>OTHER FEDERALLY SPONSORED SURVEYS</b>				
<b>Census Bureau</b> United States Department of Commerce, U.S. Bureau of the Census <a href="http://www.census.gov/">http://www.census.gov/</a>	Questionnaire administered in schools	Population	National estimates and projections of the population count, and demographic variables	Decennial Census, periodic population surveys
<b>Monitoring the Future (MTF)</b> National Institute on Drug Abuse, National Institutes of Health (conducted by Institute for Social Research at University of Michigan) <a href="http://www.monitoringthefuture.org/">http://www.monitoringthefuture.org/</a>	Self-administered questionnaire in schools	Substance use	Nationally representative sample of students in grades 8 to 12, college students, and young adults	Annually since 1975
<b>National Highway Traffic Safety Administration (NHTSA)</b> National Center for Statistics & Analysis <a href="http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/">http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/</a>	Records from fatal motor vehicle crashes and work-related fatalities	Demographics of persons involved, circumstances surrounding the crash	Records collected in multiple data sources (including GES & FARS)	Annually since 1975

Name of Data Source (Abbreviation) Sponsor Website	Data Source	Type of Data Collected	Sample	Periodicity
<b>National Household Survey on Drug Abuse (NHSDA)</b> Substance Abuse & Mental Health Administration, Office of Applied Statistics <a href="http://www.samhsa.gov/index.html">http://www.samhsa.gov/index.html</a> This survey was recently renamed <i>National Household Survey on Drug Use and Health</i>	Personal household interview	Substance use	Nationally representative sample, ages 12 and older	Annually since 1971
<b>National Longitudinal Study of Adolescent Health (AddHealth)</b> The National Institute of Child Health and Human Development (conducted by the University of North Carolina, Chapel Hill) <a href="http://www.cpc.unc.edu/projects/addhealth/">http://www.cpc.unc.edu/projects/addhealth/</a>	Self-administered questionnaire in schools	Health-related behaviors with emphasis on social context	Nationally representative sample of students in grades 7 to 12	Wave 1: 1994-95 Wave 2: 1996 Wave 3: 2001, 2002
<b>National Survey of Adolescent Males (NSAM)</b> The National Institute of Child Health and Human Development, National Institutes of Health (conducted by Urban Institute) <a href="http://www.urban.org/content/PolicyCenters/Population/Projects/Projects.htm">http://www.urban.org/content/PolicyCenters/Population/Projects/Projects.htm</a>	Household-based survey	Demographics, family & educational history, sexual behavior and knowledge, substance use	Longitudinal data collection in 3 waves: males ages 15-19, 16-21, and 21-27	1988, 1990-91, 1995

More information on adolescent health data sources is available from the following:

- Health Data Resource, University of California, San Francisco, Public Policy Analysis and Education Center for Middle Childhood and Adolescent Health, <http://youth.ucsf.edu/policycenter/index.html> (anticipated release March 2003)
- Child Trends Data Bank, Child Trends, <http://www.childtrendsdatabank.org/>
- Data Sources & Tools for Measuring Adolescent Health Status, <http://www.ucsf.edu/fhop/fhophi.html>

**APPENDIX B. Healthy People 2010 Critical Objectives for Adolescents and Young Adults**

<b>Obj. #</b>	<b>Objective</b>	<b>Baseline (year)</b>	<b>2010 Target</b>
<u>16-03.</u>	<u>Reduce deaths of adolescents and young adults.</u> - 10 to 14 year olds - 15 to 19 year olds - 20 to 24 year olds	21.8 per 100,000 (1998) 69.7 per 100,000 (1998) 93.8 per 100,000 (1998)	16.8 per 100,000 43.2 per 100,000 57.3 per 100,000
<u>15-15.</u>	<b><u>Reduce deaths caused by motor vehicle crashes.</u></b>	25.4 per 100,000 (1998)	[1]
<u>26-01.</u>	<u>Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes.</u>	11.7 per 100,000	[1]
15-19.	Increase use of safety belts.	81% (1998)	[1]
26-06.	Reduce the proportion of adolescents who report that they rode, during the previous 30 days, with a driver who had been drinking alcohol.	37% (1997)	30%
<u>18-01.</u>	<u>Reduce the suicide rate.</u>	[2]	[2]
18-02.	Reduce the rate of suicide attempts by adolescents.	2.6% (1997)	1.0%
<u>15-32.</u>	<b><u>Reduce homicides.</u></b> - 10 to 14 year olds - 15 to 19 year olds	1.5 per 100,000 (1997) 13.6 per 100,000 (1997)	[1] [1]
15-38.	Reduce physical fighting among adolescents.	36.6% (1997)	33.3%
15-39.	Reduce weapon carrying by adolescents on school property.	8.5% (1997)	6%
<b>26-11.</b>	<b>Reduce the proportion of persons engaging in binge drinking of alcoholic beverages.</b>	8.3% (1997)	3.0%
<b>26-10.</b>	<b>Reduce past-month use of illicit substances.</b>	9.4% (1997)	0.7%

Obj. #	Objective	Baseline (year)	2010 Target
06-02.	Reduce the proportion of children and adolescents with disabilities who are reported to be sad, unhappy, or depressed.	[3]	[3]
18-07.	(Developmental) Increase the proportion of children with mental health problems who receive treatment.	[4]	[4]
09-07.	<u>Reduce pregnancies among adolescent females.</u>	72 per 1,000 females (1995)	46 per 1,000
13-05.	<u>(Developmental) Reduce the number of cases of HIV infection among adolescents and adults.</u>	[4]	[4]
25-01.	<u>Reduce the proportion of adolescents and young adults with Chlamydia trachomatis infections.</u> - females attending FP clinics - females attending STD clinics - males attending STD clinics	5.0% (1997) 12.2% (1997) 15.7% (1997)	3.0% 3.0% 3.0%
25-11.	<b>Increase the proportion of adolescents who abstain from sexual intercourse or use condoms if currently sexually active.</b>	85% (1997)	95%
27-02.	<b>Reduce tobacco use by adolescents.</b>	43% (1997)	21%
19-03.	<b><u>Reduce the proportion of children and adolescents who are overweight or obese.</u></b>	10% (1994)	5%
22-07.	<b>Increase the proportion of adolescents who engage in vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.</b>	64% (1997)	85%

[1] 2010 target not provided for adolescent/young adult age group.

[2] Baseline data and 2010 target not provided for adolescent/young adult age group.

[3] Baseline and target inclusive of age groups outside of adolescent/young adult age parameters.

[4] Developmental objective – baseline and 2010 target to be provided by 2004.









