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Review article

Trends in Adolescent and Young Adult Health in the United States

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Abstract This review presents a national health profile of adolescents and young adults (ages 10–24). The data presented include trends on demographics, mortality, health-related behaviors, and healthcare access and utilization, as well as the most significant gender and racial/ethnic disparities. Although the data show some improvement, many concerns remain. Encouraging trends—such as decreases in rates of homicide, suicide, and some measures of reproductive health—appear to be leveling off or, in some cases, reversing (e.g., birth and gonorrhea rates). Large disparities, particularly by race/ethnicity and gender, persist in many areas. Access to quality healthcare services remains a challenge, especially during young adulthood. Policy and research recommendations to improve health during these critical periods in the lifespan are outlined.

Keywords: Adolescence; Young adulthood; Mortality; Risky behavior; Demographics; Healthcare access and utilization

Adolescence and young adulthood are unique periods in the life span that present opportunities and challenges in improving health. The life course health development framework recognizes that many influences shape health and views health status as a trajectory, with early events and influences shaping later outcomes [1]. Transitional periods, when individuals are more sensitive to environmental inputs, assume a critical role in this framework. Adolescence and young adulthood involve significant growth and development. During adolescence, young people are increasingly independent, taking greater responsibility for habits in areas including diet and exercise. Many initiate adult behaviors in areas including driving, substance use, and sexual activity. These habits and behaviors influence health in the short and long term. Experimentation with adult behavior reflects normative development; however, early initiation of normative adult behavior or initiation of health-damaging behaviors is of concern.

Young adulthood also entails significant transition. This period may involve many paths—such as college, military, employment—and each has implications for health status and access to care. Many traditional markers of adolescent health—including rates of homicide, unintentional injury, substance use, drinking and driving, and sexually transmitted infections (STIs)—peak during this period. As they acquire rights and privileges of adulthood, young adults lose support from institutions and safety net programs that serve adolescents. Many navigate this transition successfully, but those who rely heavily on institutional support face greater risk of poor outcomes. Although multiple national, research, policy, and program initiatives have addressed adolescent health, we know little about improving young adult health or developing systems to serve this population [2-4].

Given the complex health issues of these transitional ages and their implications for long-term health, it is critical to monitor adolescent and young adult health. This paper presents a profile of national health trends for these populations and updates data from our 2006 review of young adult health [2]. Although the data presented here are largely publicly available, the authors are not aware of any single source that provides a national health profile for these populations.

Methods and Presentation of Data

The *Healthy People 2010* 21 Critical Objectives for Adolescents and Young Adults guided the selection of health

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topics and age groupings. These objectives were selected by a federally convened panel who chose from the 108 *Healthy People 2010* objectives addressing ages 10 to 24 [5]. The objectives span six areas, which we adapt to present the results: mortality; unintentional injury; violence; substance use and mental health; reproductive health; and overweight, exercise, and diet. We also review demographics and health-care access and utilization. We define adolescents and young adults as ages 10 to 24, and present data using this age grouping where possible.

This profile is based on a review of electronic databases, articles, and reports with nationally representative measures for this age group. We conducted Internet searches with PubMed and other search engines, using terms and key words including ''adolescent,'' ''late adolescence,'' ''young adult,'' and ''emerging adulthood.'' We use several national databases (Table 1) with varying strengths and limitations. The dates of most recent and earliest data collection vary, as do age groupings and demographic breakdowns. Multiple databases may provide similar indicators; this is particularly true for substance use. Different data collection methods yield different prevalence estimates [6]. In combining data from different sources, we draw on the strengths of each to create a comprehensive profile.

Data are presented in the following sequence. The review begins with a brief demographic profile. Each health area starts with an overview of trends. We show differences between adolescents and young adults and highlight the most significant subgroup differences (Tables 2 and 3 present current figures and detailed demographic breakdowns). Data from 2002 to present are considered current. Trends are presented from 1990. A few significant trends prior to 1990 are noted. We adapt this sequence as necessary, given variation in the data sources, including relatively limited data for young adults. Figure 1 presents an overview of mortality, Figure 2 shows trends in early initiation of risky behaviors, and Figure 3 presents high levels of substance use.

Demographic profile

The adolescent and young adult population is diverse and growing. Between 1990 and 2006, the population ages 10 to 24 increased from 40.1 to 63.3 million [7,8]. In 2006, 55.2% were White, non-Hispanic (NH); 16.5% Hispanic; 13.6% Black; 3.9% Asian/Pacific Islander; 0.9% American Indian/Alaskan Native; and 9.9% other [8]. One in 10 15- to 24-year-olds were immigrants or foreign-born in 2006; they were primarily of Hispanic (63.5%) or Asian/Pacific Islander origin (21.1%) [9].

In 2006, 64.9% of adolescents ages 12 to 17 lived in two-parent households (range: 80.2% for Asians to 49.9% for Blacks) [10]. No comparable data for young adults were located. The marriage rate among females ages 20 to 24 is almost twice that of same-age males (26.7% vs. 16.0%); among females, rates are highest among Hispanics and lowest among Blacks [11].

In 2006, 17.0% of children ages 0 to 17 living in families lived in poverty; for ages 18 to 24, this figure was 17.8%. These figures represent small changes since 1994. For both age groups, rates remain highest among Black-NHs and Hispanics [12,13].

School enrollment has increased among adolescents and young adults. High school dropout rates (ages 16–24) decreased from 12.1% in 1990 to 9.4% in 2005 [14]. Among 18- to 24-year-olds, enrollment in a degree-granting institution increased from 25.7% in 1980 to 37.3% in 2006 [15].

Health Status

By traditional measures, adolescents and young adults are healthy. Virtually all adolescents ages 10 to 17 (98.1%) and young adults ages 18 to 24 (96.3%) report being in excellent, very good, or good health [16].

Mortality

The mortality rate (per 100,000) for ages 10 to 24 decreased from 76.1 in 1990 to 60.3 in 2005, with the largest decreases between 1990 and 1999. Mortality rates have decreased the most for males and Black-NHs. In 2005, over 7 in 10 deaths for ages 10 to 24 were because of motor vehicle accidents (MVAs), homicide, and suicide. Males have higher mortality rates than females (Figure 1). Disparities by race/ethnicity are sizeable: rates are highest among NH American Indians/Alaskan Natives and Blacks, and lowest among Asian/Pacific Islander-NHs. These disparities are driven primarily by high MVA mortality and suicide rates among American Indian/Alaskan Native-NH males and high homicide rates among Black-NH males [17].

MVA and related behavior

The mortality rate (per 100,000) for MVAs, the single leading cause of death for 10- to 24-year-olds, decreased from 25.3 in 1990 to 18.8 in 1999. Since then, the rate has fluctuated and stood at 18.6 in 2005. MVA rates peak in young adulthood and then decrease until about age 70. Rates are higher among males, especially American Indian/Alaskan Native-NH and White-NH males [17].

Alcohol remains a significant factor in MVA mortality. In 2007, alcohol involvement in fatal crashes was reported for 23% of drivers ages 16 to 20 and 41% of drivers ages 21 to 24. These figures represent slight increases from 1999 (21%, ages 16–20; 36%, ages 21–24) [18,19]. Rates of alcohol-related MVA fatalities peak in young adulthood [18]. Fewer high school students report risky behaviors related to alcohol and driving: about 30% of high school students reported riding with a driver who had been drinking alcohol in 2007, down from 39.9% in 1991; over the same period, the percent of students reporting drinking and driving fell from 16.7% to 10.5%. Hispanic students report higher rates of riding with a driver who has been drinking, whereas

Table 1
National data sources for monitoring adolescent and young adult health

Area	Name and Website	Source/method	Periodicity
Population and education	U.S. Census Bureau—population, poverty http://www.census.gov/	Surveys	Data and reports released in Summer every year; 2006 current (out Sept '07); since 1970
	National Center for Education Statistics (NCES) http://www.nces.ed.gov/	Surveys	Annual Digest of Education Statistics released in Summer every year; 2006 current (out June '08); since 1995
Mortality (overall and by cause)	WISQARS http://www.cdc.gov/ncipc/wisqars/default.htm	Death certificates	Data released every 1–2 years on online database, timing varies; 2005 current (out Jan '08); since 1981
Unintentional injury	Youth Risk Behavior Surveillance System (YRBSS) http://www.cdc.gov/healthyyouth/yrbs/index.htm	Surveys in high schools	Data & reports released in June every 2 years; 2007 current (out June '08); since 1991
	National Highway Traffic Safety Administration/FARS/NCSA http://www.nhtsa.dot.gov/	Police reports, fatal crash records	Annual traffic safety facts reports released in Fall every year; 2007 current (out Nov '08); since 1993
Violence	Bureau of Justice Statistics—National Crime Victimization Survey http://www.ojp.usdoj.gov/bjs/	FBI crime reports	Annual reports released in Nov/Dec every 2–3 years; 2005 current (out Dec '06); since 1996
	Youth Risk Behavior Surveillance System (YRBSS) http://www.cdc.gov/healthyyouth/yrbs/index.htm	Surveys in high schools	Data & reports released in June every 2 years; 2007 current (out June '08); since 1991
Suicide, mental health and substance use	National Health Interview Survey (NHIS) http://www.cdc.gov/nchs/nhis.htm	Household interview survey	Annual data and reports; usually out in Sept; 2006 current (out Sept '07); current survey model since 1995
	Monitoring the Future (MTF) http://monitoringthefuture.org/	Surveys in schools	Annual reports; usually out in June; 2007 current (out Sept '08); since 1975
	National Survey on Drug Use & Health (NSDUH) http://oas.samhsa.gov/nsduh.htm	Household interview survey	Annual reports & tables released in Nov/Dec; 2007 current (out Nov '08); since 1994
	Youth Risk Behavior Surveillance System (YRBSS) http://www.cdc.gov/healthyyouth/yrbs/index.htm	Surveys in high schools	Data & reports released in June every 2 years; 2007 current (out June '08); since 1991
Reproductive health	Birth data–National Vital Statistics http://www.cdc.gov/nchs/births.htm	Birth certificates	Annual reports released in Nov/Dec every year (online database now available); 2006 current (out Jan '09); since 1968
	Pregnancy data—National Vital Statistics http://www.cdc.gov/nchs/births.htm and Guttmacher Institute http://www.guttmacher.org/sections/pregnancy.php	Vital statistics calculations	Vital Stats: Data released every 2 years; timing varies; 2004 current (out Apr '08); since 1976 Guttmacher: Data/reports released every 2–3 years; timing varies; 2002 current (out Sept '06); since 1986
	National Survey of Family Growth (NSFG) http://www.cdc.gov/nchs/nsfg.htm	Interviews	Data/reports from 2002 (out July '05); conducting 2007 survey now; since 1973
	HIV/AIDS & STDs Surveillance Statistics http://www.cdc.gov/hiv/topics/surveillance/basic.htm http://www.cdc.gov/nchstp/dstd/Stats_Trends/Stats_and_Trends.htm	Cases from states/areas; confidential reporting system	Annual reports released in Nov/Dec every 1–2 years; 2007 current (out Nov '08); since 1981 (STDs) and 1982 (HIV/AIDS)
	Youth Risk Behavior Surveillance System (YRBSS) http://www.cdc.gov/healthyyouth/yrbs/index.htm	Surveys in high schools	Data and reports released in June every 2 years; 2007 current (out June '08); since 1991
Physical activity, nutrition/diet and overweight	National Health and Nutrition Examination Survey (NHANES) http://www.cdc.gov/nchs/nhanes.htm	Interviews, physical exams, clinical measurements/tests	Data & reports released in April every 2 years; 2003–2006 current (out Feb '09); since 1976
	Behavior Risk Factor Surveillance System (BRFSS) http://www.cdc.gov/brfss/	Telephone survey, national	Data released every year in online database; timing varies; 2007 current; since 1990
	Youth Risk Behavior Surveillance System (YRBSS) http://www.cdc.gov/healthyyouth/yrbs/index.htm	Surveys in high schools	Data and reports released in June every 2 years; 2007 current (out June '08); since 1991

(*Continued*)

Table 1
National data sources for monitoring adolescent and young adult health (*Continued*)

Area	Name and Website	Source/method	Periodicity
Healthcare access and utilization	National Survey of Children's Health (NSCH) http://www.nschdata.org/	Interviews	Online database; timing varies; 2003 current (out Sept '05); since 2003
	National Survey of Children with Special Health Care Needs (NS – CSNCN) http://www.cshcndata.org/	Interviews	Online database; timing varies; 2005/06 current (out Oct '07); since 2001
	National Hospital Ambulatory Medical Care Survey (NHAMCS) http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm	Patient records	Reports; timing varies; 2005 current (out June '07); since 1992
	Medical Expenditure Panel Survey (MEPS) http://www.meps.ahrq.gov/mepsweb/data_stats/quick_tables.jsp	Household interviews	Reports/tables released every year; timing varies; 2005 current; since 1996

male and White-NH students are most likely to report driving when they had been drinking [20].

Seat belt use has improved among high school students: in 2007, 88.9% reported wearing a seat belt ''always, most of the time, or sometimes'' when riding as a passenger in a vehicle, an increase from 74.1% in 1991 [20].

Nonfatal injuries far outweigh fatal injuries for adolescents and young adults involved in MVAs. Among ages 16 to 24 in 2005, there were 161 nonfatal injuries for every MVA-related death [17].

Violence

Trends in violence are encouraging, although there remains room for improvement. The homicide rate for ages 10 to 24 (per 100,000) decreased from 14.1 in 1990 to 8.9 in 1999, and has changed little since then (9.0 in 2005). Homicide, the second leading cause of death for ages 10 to 24, peaks in young adulthood and then decreases throughout the life span. In this age group, 81.6% of homicides are firearm-related [17]. Most perpetrators and victims of homicide (and other violent crimes) are adolescent and young adult males [17,21,22]. Homicide disproportionately involves Black-NH males, for whom homicide is the leading cause of death [17].

Rates of homicide offense follow similar patterns. Between 1993 and 2005, the homicide offending rate (per 100,000) decreased considerably for adolescents ages 14 to 17 (31.3 vs. 9.3) and young adults ages 18 to 24 (42.8 vs. 26.5). Homicide offending rates are highest in young adulthood, particularly for Black-NH males (203.3, 2005) [21].

Nonfatal crime rates decreased dramatically between 1996 and 2005 across ages 12 to 24. Overall victimization rates peak in late adolescence (ages 16–19) and are higher for males, especially Black males. Rates for Black males peak in late adolescence, while rates for White males peak in young adulthood [22].

High school students also report a decrease in violent behavior. Between 1991 and 2007 the percentage reporting getting into a physical fight fell from 42.5% to 35.5%. Weapon carrying decreased from 26.1% to 18.0% [20].

Suicide and mental health

The rate (per 100,000) for suicide, the third leading cause of death for ages 10 to 24, decreased from 9.5 in 1990 to 7.0 in 1999. It has fluctuated since then, and was 7.1 in 2005. Rates are higher for males and American Indian/Alaskan Native-NH youths and lower for Asian/Pacific Islander-NH youths [17]. In 2007, 6.9% of high school students reported a suicide attempt, a figure only slightly lower than in 1991 (7.3%), with higher rates for females [20].

National mental health data are fairly limited, with trend data nearly nonexistent. Nonetheless, adolescence and young adulthood are critical periods to identify and treat mental health problems, as symptoms of nearly half of lifetime

diagnosable problems appear by age 14 and symptoms of nearly three quarters of lifetime diagnosable problems begin by age 24 [23]. A recent review of national data suggests that one in five adolescents experience significant emotional distress and 1 in 10 faces more serious impairment [24]. Depression is the most widely reported disorder. Females are more likely than males to report feelings of sadness or hopelessness for 2 weeks or more in the past year; rates are highest for Hispanic females (42.3%) and lowest for White-NH males (17.8%) [20]. Table 3 presents additional measures related to suicide attempts and depression.

Mental health data beyond depression are even more limited. Data from 2005 for ages 12 to 17 show that males are more likely than females to have learning disabilities (11% vs. 7.4%) and attention deficit–hyperactivity disorder (12.6% vs. 5.1%) [24]. Although no national data on eating disorders could be located, measures of unhealthy weight loss behavior from 2007 show that about 10% of high school students reported use of diet pills, powders, and liquids, vomiting, or use of laxatives. Rates of all these behaviors have decreased since 1999. Female students, especially White-NHs and Hispanics, are more likely to report these behaviors [20].

Substance use

Current use of alcohol, tobacco, and marijuana and other illicit drugs is well below the peaks of the late 1970s and early 1980s. Rates for most substances fell to near or all-time lows in the early 1990s, then rose again in the mid-1990s. Since the late 1990s, trends have diverged by substance [25]. Adolescent experimentation with substances can begin early. Figure 2 shows mixed patterns of substance use among ninth graders between 1991 and 2007. This period saw a large decrease in frequent cigarette smoking, modest decreases in alcohol use, and increases in cigarette and marijuana experimentation [20]. Most indicators of substance use peak in young adulthood and decrease over the life span. Differences by gender in adolescence are mostly fairly small, whereas males generally report higher rates in young adulthood. (Trend data in the text come from the Monitoring the Future

Table 2
Mortality rates (per 100,000) for adolescents and young adults by cause, age group, gender and race/ethnicity, 2005[a]

	Overall rates	Gender		Racial/ethnic group				
		Male	Female	White- NH	Black- NH	Hispanic	AI/AN- NH	Asian or A/PI-NH
Mortality								
Overall[1]								
Ages 10-24	**60.3**	**85.9**	**33.3**	**56.0**	**84.7**	**57.9**	**98.3**	**33.2**
Ages 10-14	18.0	21.5	14.4	16.8	25.9	15.3	27.1	14.5
Ages 15-19	65.1	91.5	37.2	60.4	86.2	66.9	114.7	34.4
Ages 20-24	97.5	143.9	48.1	89.4	147.8	93.5	152.3	48.7
Unintentional Injury								
Ages 10–24	**27.1**	**39.2**	**14.4**	**29.7**	**20.9**	**25.7**	**49.4**	**12.6**
Ages 10–14	6.4	8.1	4.7	6.6	7.9	4.9	12.0	4.4
Ages 15–19	31.4	43.0	19.2	34.3	23.3	30.3	57.8	14.8
Ages 20–24	43.4	66.1	19.2	47.2	32.6	43.0	78.0	18.0
Motor Vehicle Accidents								
Ages 10–24	**18.6**	**26.0**	**10.9**	**19.8**	**14.5**	**19.3**	**34.2**	**8.8**
Ages 10–14	3.4	4.2	3.1	4.0	4.2	3.7	8.7	2.4
Ages 15–19	23.6	29.6	15.9	25.7	17.1	23.7	41.3	9.9
Ages 20–24	28.2	41.4	13.1	29.2	22.9	31.2	52.1	13.3
Homicide								
Ages 10–24	**9.0**	**15.2**	**2.6**	**2.5**	**32.8**	**12.2**	**11.6**	**5.2**
Ages 10–14	1.1	1.3	0.8	0.5	3.1	1.1	1.4	1.1
Ages 15–19	9.9	16.8	2.5	2.5	34.6	9.9	11.3	4.7
Ages 20–24	16.1	27.2	4.3	4.3	63.4	16.1	22.2	9.2
Suicide								
Ages 10–24	**7.1**	**11.4**	**2.6**	**8.1**	**4.9**	**5.3**	**20.2**	**4.1**
Ages 10–14	1.3	1.9	0.7	1.3	1.2	1.0	6.0	0.9
Ages 15–19	7.7	12.1	3.0	8.8	4.5	6.0	24.8	4.2
Ages 20–24	12.4	20.2	4.0	14.0	9.4	9.1	29.5	7.0

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

[a]National Center for Injury Prevention and Control. WISQARS: Leading Causes of Death, Fatal and Nonfatal Injury Reports [online database]. Available at: http://www.cdc.gov/ncipc/wisqars/. Accessed March 18, 2009.

[1]To calculate the overall mortality rate(s), the authors used numbers of deaths from Leading Causes of Death and population estimates from Fatal Injury Reports in WISQARS.

Table 3
Adolescent and young adult behaviors and outcomes by age group, gender and race/ethnicity

	Overall	Gender		Racial/ethnic group				
		Male	Female	White- NH	Black- NH	Hispanic	AI/AN- NH	Asian or A/PI-NH
Unintentional Injury								
Safety belt use H.S. students[b]	88.9%	86.4%	91.5%	89.9%	87.6%	87.1%	NA	NA
Rode with drunk driver H.S. students[b]	29.1%	29.5%	28.8%	27.9%	27.4%	35.5%	NA	NA
Drinking and driving H.S. students[b]	10.5%	12.8%	8.1%	11.6%	5.7%	10.3%	NA	NA
Driving under influence								
Ages 12–17	*3.2%*	*2.9%*	*3.4%*	*4.1%*	*1.2%*	*2.4%*	*4.0%*	*0.4%*
Ages 18–25*c	*24.4%*	*27.6%*	*21.1%*	*29.6%*	*13.1%*	*16.8%*	*29.3%*	*17.5%*
Violence								
Physical fighting H.S. students[b]	35.5%	44.4%	26.5%	31.7%	44.7%	40.4%	NA	NA
Weapon carrying H.S. students[b]	18.0%	28.5%	7.5%	18.2%	17.2%	18.5%	NA	NA
Suicide and Mental Health								
Attempted suicide H.S. students[b]	6.9%	4.6%	9.3%	5.6%	7.7%	10.2%	NA	NA
Seriously considered suicide attempt H.S. students[b]	14.5%	10.3%	18.7%	14.0%	13.2%	15.9%	NA	NA
Feeling sad/hopeless H.S. students[b]	28.5%	35.8%	21.2%	26.2%	29.2%	36.3%	NA	NA
Major depressive episode								
Ages 12–17*	8.2%	4.6%	11.9%	8.7%	7.8%	7.1%	4.6%	6.8%
Ages 18–25*[c]	8.9%	6.0%	11.9%	*9.6%*	*8.2%*	*7.0%*	*10.5%*	*7.1%*
Serious psychological distress Ages 18–25*[c]	17.9%	13.5%	22.3%	19.6%	15.2%	14.2%	19.2%	15.7%
Took diet pills, powders or liquids H.S. students[b]	5.9%	4.2%	7.5%	6.0%	3.7%	6.4%	NA	NA
Vomited or took laxatives H.S. students[b]	4.3%	2.2%	6.4%	4.1%	3.0%	5.3%	NA	NA
Substance Use								
Any alcohol use								
Ages 12–17	15.9%	15.9%	16.0%	18.2%	10.1%	15.2%	*20.5%*	7.6%
Ages 18–25*[c]	61.2%	65.3%	57.1%	67.5%	50.2%	50.7%	*53.1%*	50.1%
Binge drinking								
Ages 12–17	9.7%	10.6%	8.8%	11.5%	4.3%	9.3%	*13.2%*	5.2%
Ages 18–25*[c]	41.8%	49.8%	33.7%	48.2%	25.4%	35.3%	*43.9%*	28.1%
Heavy alcohol use								
Ages 12–17	2.3%	2.8%	1.8%	3.1%	0.5%	2.3%	*2.2%*	1.2%
Ages 18–25*[c]	14.7%	19.9%	9.5%	18.5%	5.7%	10.7%	*14.0%*	6.3%
Any cigarette use								
Ages 12–17	9.8%	10.0%	9.7%	12.2%	6.1%	6.7%	13.4%	3.4%
Ages 18–25*[c]	36.2%	40.5%	31.8%	40.8%	26.2%	29.5%	52.2%	25.7%
Illicit drug use								
Ages 12–17	9.5%	10.0%	9.1%	10.2%	9.4%	8.1%	*18.7%*	6.0%
Ages 18–25*[c]	19.7%	24.1%	15.3%	21.9%	18.7%	14.6%	*28.5%*	11.2%
Dependence/abuse								
Ages 12–17	7.7%	7.7%	7.7%	8.7%	4.7%	7.3%	*11.1%*	3.3%
Ages 18–25*[c]	20.7%	25.8%	15.5%	23.5%	14.9%	16.7%	*31.3%*	13.9%

(*Continued*)

Table 3
Adolescent and young adult behaviors and outcomes by age group, gender and race/ethnicity (*Continued*)

	Overall	Gender		Racial/ethnic group				
		Male	Female	White- NH	Black- NH	Hispanic	AI/AN- NH	Asian or A/PI-NH
Reproductive Health								
Sex before age 13 H.S. students[a]	7.1%	10.1%	4.0%	4.4%	16.3%	8.2%	NA	NA
Ever had sex H.S. students[a]	47.8%	49.8%	45.9%	43.7%	66.5%	52.0%	NA	NA
Four or more sex partners H.S. students[a]	14.9%	17.9%	11.8%	11.5%	27.6%	17.3%	NA	NA
Condom use at last sex H.S. students[a]	61.5%	68.5%	54.9%	59.7%	67.3%	61.4%	NA	NA
Contraception use								
Ages 15–19	NA	NA	31.5%	NA	NA	NA	NA	NA
Ages 20–24[c]			60.7%					
Alcohol/drugs and sex H.S. students[a]	22.5%	27.5%	17.7%	24.8%	16.4%	21.4%	NA	NA
Pregnancy rate[d] (Rate per 1,000)								
Ages 15–17	NA	NA	41.5	22.4	80.1	82.9	NA	NA
Ages 18–19			118.6	79.3	202.9	210.0		
Ages 20–24			163.7	122.8	259.0	244.8		
Birth rate[e] (Rate per 1000)								
Ages 15–17	NA	NA	22.2	11.8	35.8	47.8	31.7	8.4
Ages 18–19			73.9	50.5	109.3	137.1	101.3	30.7
Ages 20–24			106.4	83.3	133.6	178.5	116.3	66.2
Chlamydia[f] (rate/100,000)								
Ages 10–14	66.1	11.8	123.0	21.3	249.2	55.8	120.4	14.9
Ages 15–19	1779.3	615.0	3004.7	787.7	6052.0	1722.4	2547.7	465.0
Ages 20–24	1907.0	932.9	2948.8	988.5	6018.2	1976.5	2866.1	659.8
Gonorrhea[f] (rate/100,000)								
Ages 10–14	19.2	5.9	33.1	3.8	95.1	9.2	14.2	2.4
Ages 15–19	462.3	286.0	647.9	118.0	2237.2	208.1	288.0	55.4
Ages 20–24	529.5	450.0	614.5	158.8	2618.3	260.2	400.4	77.9
HPV[g]								
Ages 15–19	NA	NA	24.5%	NA	NA	NA	NA	NA
Ages 20–24			44.8%					
HIV/AIDS[h] (# new cases)								
Ages 15–19	1332	509	414	161	763	140	5	6
Ages 20–24	3886	2611	1129	812	2,196	688	32	12
Physical Activity, Nutrition/Dieting and Overweight								
Met recommended level of physical activity H.S. students[a]	34.7%	43.7%	25.6%	37.0%	31.1%	30.2%	NA	NA
Physical activity Ages 18–24[i]	22.9%	26.4%	19.2%	26.0%	15.9%	18.2%	25.9%	13.8%
Watched TV 3+ Hours/day H.S. students[a]	35.4%	37.5%	33.2%	27.2%	62.7%	43.0%	NA	NA
Ate fruits and veggies 5+ times daily H.S students[a]	21.4%	22.9%	19.9%	18.8%	24.9%	24.0%	NA	NA
Drank soda daily H.S. students[a]	33.8%	38.6%	29.0%	34.0%	37.6%	33.4%	NA	NA
Overweight								
Ages 12–19[j]	17.6%	18.2%	16.8%	*17.3%*	*21.8%*	*(Mex-Am) 16.3%*	*NA*	*NA*
Ages 18–24[i]	26.6%	30.8%	22.0%	24.6%	28.1%	32.0%	34.2%	21.0%
Obese								
Ages 18–24[i]	16.2%	16.1%	16.3%	14.1%	23.7%	18.8%	17.3%	6.5%

Note: All cells marked NA do not have data available for that indicator and/or category.

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

H.S. = high school.

*New substance use and mental health data for 2007 NSDUH were released, but were not available for every variable or breakdown; therefore, we have kept 2006 data wherever 2007 data were not available. Italicized rates are 2006 data.

Definitions of Indicators:

Unintentional Injury

- Safety belt use = % of students who always/almost always wore a seat belt when riding in a car/vehicle driven by someone else; lifetime; 2007
- Rode with drunk driver = % of students who rode 1+ time(s) in a car/vehicle driven by someone else who had been drinking alcohol; past 30 days; 2007
- Drinking & driving = % of students who drove a car/vehicle 1+ time(s) when they had been drinking alcohol; past 30 days; 2007
- Driving under influence = % who drove a vehicle under the influence of alcohol; past 12 months; 2006

Violence

- Physical fighting = % of students who were in a physical fight 1+ time(s); past 12 months; 2007
- Weapon carrying = % of students who carried a weapon (gun, knife, club, etc.) 1+ days; past 30 days; 2007

Suicide and Mental Health

- Attempted suicide = % of students who attempted suicide 1+time(s); past 12 months; 2007
- Seriously considered suicide attempt = % of students who seriously considered attempting suicide; past 12 months; 2007
- Feeling sad/hopeless = % of students who felt so sad or hopeless almost every day for 2+ weeks in a row that they stopped doing some usual activities; past 12 months; 2007
- Major Depressive Episode = % reporting past year major depressive episode (MDE); defined as having a lifetime MDE and a period in the past 12 months when felt depressed or lost interest or pleasure in daily activities for 2 weeks or longer, while also having some of the other nine symptoms that define MDE as based on the definition found in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders; 2006 (italic font) and 2007.
- Serious Psychological Distress = % reporting past year serious psychological distress; defined based on data collected from a series of six questions asking respondents how frequently they experienced symptoms of psychological distress during the one month in the past year when they were at their worst emotionally. These questions are known as the K6, and include the following symptoms of distress: feeling nervous, feeling hopeless, feeling restless or fidgety, feeling so sad or depressed that nothing could cheer you up, feeling everything was an effort, and feeling no good or worthless; past year; 2007.
- Took diet pills, powders or liquids = % of students who took any diet pills, powders, or liquids without a doctor's advice to lose weight or to keep from gaining weight; past 30 days; 2007.
- Vomited or took laxatives = % of students who vomited or took laxatives to lose weight or to keep from gaining weight; past 30 days; 2007.

Substance Use

- Any use = % reporting any alcohol, cigarette, or illicit drug use; past month; 2006 (italic font) and 2007.
- Binge drinking = % reporting that they drank five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least one day in the past month; 2006 (italic font) and 2007.
- Heavy alcohol use = % reporting binge drinking on five or more days; past month; 2006 (italic font) and 2007.
- Illicit drugs = defined as marijuana/hashish, cocaine, heroin, hallucinogens, inhalants, or any prescription-type psychotherapeutic used nonmedically; past month; 2006 (italic font) and 2007.
- Dependence/abuse = % reporting dependence on alcohol or illicit drugs; defined as meeting a certain number of criteria included in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders; past year; 2006 (italic font) and 2007.

Reproductive Health

- Sex before age 13 = % of students who reported that they had sexual intercourse for the first time before age 13; lifetime; 2007.
- Ever had sex = % of students who responded they had ever had sexual intercourse; lifetime; 2007.
- Condom use at last sex = % of students who used a condom (or reported that partner used a condom) at last sexual intercourse (among those who were currently sexually active—had sex in the past 3 months); 2007.
- Alcohol/drugs and sex = % of students who had alcohol or drugs before last sexual intercourse; 2007.
- Pregnancy = rate per 1000 of pregnancy, past year; 2004.
- Birth = rate per 1000 of live birth, past year; 2007.
- Chlamydia = rate per 100,000 of Chlamydia trachomitis infection, past year; 2007.
- Gonorrhea = rate per 100,000 of Neisseria gonorrhoeae infection, past year; 2007.
- HPV = % of Human Papillomavirus infection.
- HIV/AIDS = number of new cases of human immunodeficiency virus and/or acquired immunodeficiency syndrome as provided from the reporting areas—33 states and 5 areas—in the past year; 2006—overall number of cases; 2004—number of cases by gender and race/ethnicity.

Physical Activity, Nutrition/Dieting, Overweight

- Met recommended level of physical activity (high school) = % of students who did any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on five or more of the 7 days before the survey; this is a new variable that was introduced in 2005 and replaced other variables of measuring physical activity that are included in the article; past week; 2007.
- Physical activity = % of 18–24-year-olds who reported meeting recommended levels of vigorous (large increases in breathing/heart rate) and moderate (small increases in breathing/heart rate) physical activity for at least 10 minutes at a time in a usual week; past week; 2005.
- Watched TV 3+ hours/day = % of students who watched television 3 or more hours per day on an average school day; 2007.
- Ate fruits/veggies 5+ times daily = % of students who ate fruits and vegetables (100% fruit juices, fruit, green salad, potatoes [excluding French fries, fried potatoes, or potato chips], carrots, or other vegetables) five or more times per day during the 7 days before the survey; past week; 2007.
- Drank soda daily = of students who drank a can, bottle, or glass of soda or pop (not including diet soda or diet pop) at least 1 time per day during the 7 days before the survey; past week; 2007.
- Overweight = % of 12–19-year-olds who are measured at or above the 95th percentile of the sex-specific body mass index (BMI) for age growth charts; NHANES data use "Mexican American" for the Hispanic racial/ethnic category; past year, combined; 2003–2006 for overall and gender data; 2003–2004 for racial/ethnic data.
- Overweight and obese = % of 18–24-year-olds who are measured for BMI levels, defined as body mass index that is either 25–29.9 for overweight or 30+ for obese; past year; 2005.

Sources:

[a]Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance System [youth online database]. Available at: http://apps.nccd.cdc.gov/yrbss. Accessed March 18, 2009.

[b]Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Detailed tables of 2006 National Survey on Drug Use and Health. Available at: http://oas.samhsa.gov/NSDUH/2k6NSDUH/tabs/TOC.htm. Accessed March 18, 2009; AND Substance Abuse and Mental Health Data Archive. National Survey on Drug Use and Health [online database]. Available at: http://www.icpsr.umich.edu/SAMHDA/. Accessed March 18, 2009; AND Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Detailed tables of 2007 National Survey on Drug Use and Health. Available at: http://oas.samhsa.gov/NSDUH/2k7NSDUH/tabs/TOC.htm. Accessed March 18, 2009.

[c]Mosher WD, Martinez GM, Chandra A, et al. Use of contraception and use of family planning services in the United States, 1982–2002. Advance Data from Vital Health Stat 2004;350:1–36. Available at: http://www.cdc.gov/nchs/data/ad/ad350.pdf. Accessed March 18, 2009.

[d]Ventura SJ, Abma JC, Mosher WD. Estimated pregnancy rates by outcome for the Unites States, 1990–2004. Natl Vital Stats 2008;56(15):1–26. Available at: http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_15.pdf. Accessed March 18, 2009.

[e]Hamilton BE, Martin JA, Ventura SJ. Births: preliminary data for 2007. Natl Vital Stats 2009;57(12):1–23. Available at: http://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57_12.pdf. Accessed March 18, 2009.

[f]Centers for Disease Control and Prevention. Sexually transmitted disease surveillance 2007. Available at: http://www.cdc.gov/nchstp/dstd/Stats_Trends/Stats_and_Trends.htm. Accessed March 18, 2009.

[g]Centers for Disease Control and Prevention. Surveillance 2006, National Profile: Other STDs. Available at: http://www.cdc.gov/std/stats/other.htm. Accessed March 18, 2009.

[h]Centers for Disease Control and Prevention. HIV/AIDS surveillance report, cases of HIV infection and AIDS in the United States and dependent areas, 2006. Available at: http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2006report/pdf/2006SurveillanceReport.pdf. Accessed March 18, 2009; AND Centers for Disease Control and Prevention. HIV/AIDS surveillance supplemental report, cases of HIV infection and AIDS in the United States by Race/Ethnicity, 2000-2004. Available at: http://www.cdc.gov/hiv/topics/surveillance/resources/reports/index.htm. Accessed March 18, 2009.

[i]Centers for Disease Control and Prevention. Behavior Risk Factor Surveillance System [online WEAT database]. Available at: http://apps.nccd.cdc.gov/s_broker/htmsql.exe/weat/index.hsql. Accessed March 18, 2009.

[j]National Center for Health Statistics. Health, United States, 2008. Available at: http://www.cdc.gov/nchs/hus.htm. Accessed February 12, 2009. [2003–2006 overall and gender data]; AND Ogden CL, Carroll MD, Curtin LR, et al. Prevalence of overweight and obesity in the United States, 1999–2004. JAMA 2006;295(13):1549–1555. [2003-04 racial/ethnic data]

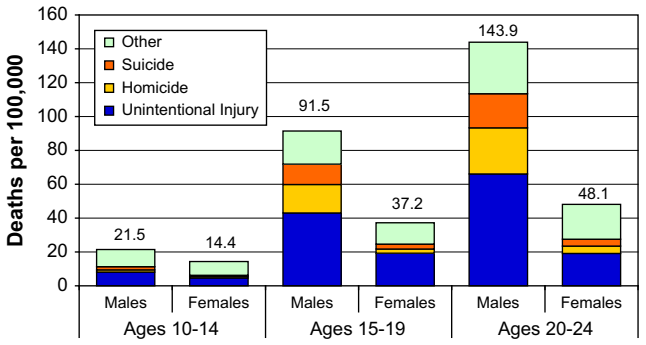

Figure 1. Mortality rates by gender, age group, cause, ages 10 to 24, 2005. Source: [17] National Center for Injury Prevention and Control. WISQARS: Leading Causes of Death, Fatal and Non-Fatal Injury Reports [online database]. Available at: http://www.cdc.gov/ncipc/wisqars/. Accessed March 18, 2009.

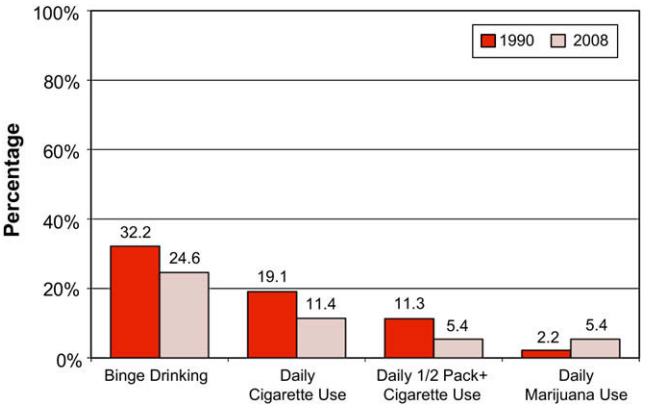

Figure 3. Selected high-risk substance use behaviors among 12th graders, 1990 and 2008.
Sources: [25] Johnston LD, O'Malley PM, Bachman JG, et al. Monitoring the Future: National survey results on drug use, 1975-2007: Volume I: Secondary school students (NIH Publication No. 08-6418A). Available at: http://monitoringthefuture.org/. Accessed March 18, 2009; [26] Johnston LD, O'Malley PM, Bachman JG, et al. Various stimulant drugs show continuing gradual declines among teens in 2008, most illicit drugs hold steady. Available at: http://monitoringthefuture.org/. Accessed March 18, 2009. Binge drinking = drank 5 or more alcoholic drinks in a row in the past 2 weeks; Daily cigarette use = smoked 1+ cigarette(s) a day in the past month; Daily 1/2 pack+ cigarette use = smoked a half-pack or more of cigarettes a day in the past month; Daily marijuana use = used marijuana daily in the past month.

Survey. The current use data in Table 3 come from the National Survey on Drug Use and Health.)

Past-month alcohol use among 12th graders has decreased since 1997 (52.7%) and was 43.1% in 2008, a considerable decrease from 57.1% in 1990 [25,26]. Indicators of alcohol use increase three- to sixfold between adolescence and young adulthood, with young adult males reporting higher rates than females. Use is higher among American Indian/Alaskan Native-NH and White-NH adolescents and young adults and lowest among their Black and Asian peers [27].

By most measures, cigarette use has decreased since rising in the early 1990s. Past-month cigarette smoking among 12th graders went from 29.4% in 1990, to 36.5% in 1997, to 20.4% in 2008. Past-month daily smoking shows a similar pattern: 19.1% in 1990, 24.6% in 1997, to 11.4% in 2008 [25,26]. Rates of past-month smoking nearly quadruple between adolescence and young adulthood [28].

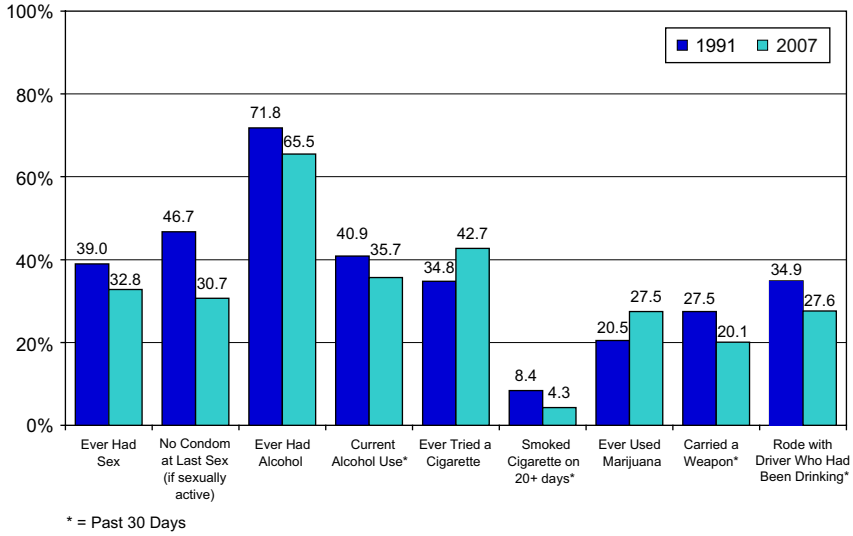

Figure 2. Selected behaviors among ninth graders, 1991 and 2007.
Source: [20] Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance System [youth online database]. Available at: http://apps.nccd.cdc.gov/yrbss. Accessed March 18, 2009. Ever had sex = % of students who responded they had ever had sexual intercourse (in their lifetime); No condom use = % of students who did not use a condom (or reported that partner didn't use a condom) at last sexual intercourse (among those who were currently sexually active, defined as having had sex in the past 3 months); Ever had alcohol = % of students who ever tried alcohol, other than a few sips (in their lifetime); Current alcohol use = % of students who had at least one drink of alcohol on at least 1 day during past 30 days; Ever tried a cigarette = % of students who ever tried a cigarette, even one or two puffs (in their lifetime); Smoked cigarettes 20+ days = % of students who smoked cigarettes on 20+ days in the past 30 days; Ever used marijuana = % of students who ever used marijuana (in their lifetime); Carried a weapon = % of students who carried a weapon (gun, knife, club, etc.) 1+ days in the past 30 days; Rode with driver who had been drinking = % of students who rode 1+ time(s) in a car/vehicle driven by someone else who had been drinking alcohol in past 30 days.

By contrast, past-month illicit drug use among 12th graders has changed less since 1990. Any past-month use increased from 17.2% in 1990 to 25.6% in 1997. Rates from 2007 and 2008 are similar: 21.9% and 22.3%, respectively [25,26]. Rates double between adolescence and young adulthood. American Indian/Alaskan Native-NHs and White-NHs report the highest rates of past-month illicit drug use among adolescents and young adults [27]. Trends in use of marijuana, the most widely used illicit drug, parallel trends in illicit drug use. The overall prevalence in use of illicit drugs besides marijuana has changed little since 1990, but the ''drug of choice'' has changed [25]. More recently, use of nonprescribed prescription drugs has increased among 12th graders [29].

Substance dependence or abuse is also prevalent among adolescents and young adults. Between 2000 and 2007, rates of dependence or abuse were identical for 12- to 17-year-olds (7.7%) and increased for 18- to 25-year-olds (15.4% vs. 20.7%) [28,30]. Male and female adolescents report similar levels of substance dependence or abuse, whereas young adult males report higher rates than same-age females. Among racial/ethnic groups, American Indian/Alaskan Native-NH adolescents and young adults report the highest rates of substance dependence or abuse [27].

Reproductive health

Trends in reproductive health indicators have been encouraging since the early 1990s. However, some of these trends, including rates of being sexually experienced, first sex before age 13, and condom use appear to have plateaued since 2004 to 2005. National data on sexual activity between same-gender partners are limited. In 2002, 10.6% of young females reported a same-gender sexual partner, compared to 4.5% of males. Among young adults ages 20 to 24, this gender difference widens (14.2% vs. 5.5%) [31]. The remaining data address sexual behavior with an opposite gender partner.

The percentage of high school students who have had sexual intercourse decreased from 54.1% in 1991 to 46.8% in 2005 then increased slightly to 47.8% in 2007 [20]. In 2002, about four-fifths of young adults aged 18 to 24 reported being sexually experienced [32].

The percentage of sexually active students reporting condom use at most recent intercourse increased steadily from 46.2% in 1991 to 62.8% in 2005 and then decreased to 61.5% in 2007 [20]. In 2002, only 28.2% of males 20 to 24 years old reported using a condom at every intercourse [33]. Among females at risk of unintended pregnancy, 82% of adolescents (ages 15–19) and 87% of young adults (ages 20–24) report current contraceptive use; birth control pills are the most widely used method [34].

Rates of most risky sexual behaviors among high school students have decreased overall: the proportion reporting first sex before age 13 decreased slightly from 10.2% in 2001 to 7.1% in 2007. Similarly, the proportion having four or more lifetime sexual partners decreased from 18.7% in 1991 to 14.2% in 2001, and has changed little since then (14.9% in 2007). By contrast, there has been virtually no net change in the proportion of students who report drinking alcohol or using drugs prior to sex (21.6% in 1991; 25.6% in 2003; 22.5% in 2007) [20]. Males are more likely to report these behaviors than females. Among 20- to 24-year-olds, males were more likely than females to report seven or more partners in their lifetime (30.0% vs. 21.3%) [31].

Pregnancy, abortion, and birth rates (all per 1000) have decreased substantially for 15- to 19-year-old females. The pregnancy rate fell from 116.8 in 1990 to 72.2 in 2004; the abortion rate decreased from 40.3 to 19.8 over the same period. For women ages 20 to 24, declines were smaller during this period: pregnancy rates decreased from 198.5 to 163.7; abortion rates declined from 56.7 to 39.9 [35]. Birth rates for adolescents ages 15 to 19 decreased from 59.9 in 1990 to 40.5 in 2005, then increased slightly to 42.5 in 2007. Similarly, the birth rate for ages 20 to 24 fell from 116.5 in 1990 to 102.2 in 2005, then increased to 106.4 in 2007 [36,37].

The rates of gonorrhea decreased from 1996 to 2003, but increased from 2004 to 2007. Chlamydia rates increased from 1996 to 2007 [38,39]; this may reflect wider screening and use of more sensitive tests [40]. Rates of STIs peak in late adolescence and early young adulthood, with 15- to 24-year-olds accounting for nearly half of all new STIs [40]. Female youths continue to be disproportionately affected by STIs, especially Black females [38].

In 2006, 14.2% of all new HIV diagnoses were among 15-24 year-olds. Estimated numbers of new HIV/AIDS cases in this age group increased from 2002 to 2006 and are highest for Black-NHs [41,42]. Deaths of persons with AIDS remained stable or increased slightly for 15- to 24-year-olds during this period [42].

Exercise, diet, and overweight

Exercise levels have remained stable since 1993. The percentage of high school students reporting exercising three or more times per week 20+ minutes was 65.8% in 1993 and 64.0% in 2007. Males were more likely to report this than females [20,43]. Among young adults ages 18 to 24 in 2005, 60.9% reported 30+ minutes of moderate physical activity 5 or more days a week, or vigorous physical activity for 20+ minutes 3 or more days per week [44]. Sedentary activity, measured by watching television for 3 or more hours per day, decreased from 42.8% in 1999 to 35.4% in 2007 among high school students [20].

National data on diet and nutrition are limited. For high school students, consumption of fruits and vegetables at least five times a day in the past week is low, with little change from 1999 (23.9%) to 2007 (21.4%) [20].

The prevalence of overweight among 12- to 19-year-olds almost doubled between 1988-1994 and 2003-2006 (10.5% vs. 17.6%) [45]. Among 18- to 24-year-olds in 2005, more

Table 4
Health insurance status, types of visits, and unmet need indicators by age group, income, race/ethnicity, gender, and insurance status, 2006

Indicator	Total group	Poverty status			Racial/ethnic group				Gender		Insurance status		
		FPL lowest	FPL middle	FPL highest	White	Black	Hispanic	Asian	Male	Female	Full year insured	Full year un-insured	Partial year insured
Insurance status:													
Full year insured													
Ages 10–17	87.1%	79.2%	76.8%	93.0%	90.6	88.2%	70.3%	87.8%	85.7%	87.1%			
Ages 18–24	65.1%	60.2%	52.1%	72.4%	70.7	66.1%	40.7%	78.6%	61.6%	68.7%			
Full year uninsured													
Ages 10–17	6.4%	11.4%	11.7%	3.1%	3.4%	3.5%	19.6%	8.9%	7.1%	6.0%			
Ages 18–24	20.1%	24.2%	29.8%	14.5%	13.9%	18.3%	46.0%	13.3%	25.0%	15.2%			
Partial year uninsured													
Ages 10–17	6.5%	9.4%	11.5%	3.9%	6.0%	8.3%	10.1%	3.4%	7.2%	6.9%			
Ages 18–24	14.7%	15.6%	18.1%	13.1%	15.5%	15.6%	13.3%	8.1%	13.4%	16.1%			
Types of visits:													
Usual place when sick													
Ages 10–17	93.7%	90.0%	90.4%	96.1%	96.2%	94.6%	85.4%	88.9%	93.1%	94.4%	97.2%	62.2%	81.4%
Ages 18–24	72.6%	70.4%	63.0%	77.6%	76.5%	77.9%	54.7%	66.7%	65.1%	80.0%	86.7%	39.3%	64.9%
Had doctor visit, past year (besides hosp, ER, surg.)													
Ages 10–17	84.2%	81.2%	80.5%	86.5%	87.2%	84.2%	76.6%	74.9%	83.0%	85.5%	87.2%	54.9%	76.5%
Ages 18–24	72.0%	74.4%	65.9%	73.5%	75.8%	71.0%	59.1%	67.7%	59.3%	84.7%	80.1%	46.2%	79.0%
Had well check- up, past year													
Ages 10–17	66.2%	61.3%	62.2%	69.2%	68.1%	72.4%	55.2%	64.3%	67.1%	65.2%	70.3%	34.1%	47.8%
Had 1+ ER visit, past year													
Ages 10–17	17.5%	20.9%	16.7%	16.8%	18.8%	19.9%	13.6%	8.1%	17.9%	17.1%	17.9%	9.2%	22.1%
Ages 18–24	24.9%	28.2%	23.7%	24.1%	26.9%	27.1%	18.8%	14.1%	20.7%	29.2%	23.6%	21.3%	36.5%
Dentist visit, past year													
Ages 10–17	83.5%	75.7%	75.5%	88.7%	88.1%	80.7%	71.0%	83.7%	81.8%	85.3%	88.1%	40.6%	68.3%
Ages 18–24	60.6%	60.4%	51.6%	64.6%	67.0%	53.0%	43.2%	64.1%	57.7%	63.6%	72.4%	31.5%	55.6%
Delay in care, unmet needs:													
Delay in care, past year													
Ages 10–17	8.0%	14.7%	7.7%	6.1%	6.8%	8.7%	11.4%	5.8%	7.6%	8.4%	7.6%	9.9%	12.8%
Ages 18–24	10.5%	10.8%	11.1%	10.1%	10.9%	11.3%	8.4%	9.4%	7.2%	13.8%	10.2%	8.0%	15.2%
Unmet need for dental care, past year													
Ages 10–17	8.6%	12.8%	12.7%	5.9%	7.9%	7.8%	12.4%	3.9%	8.1%	9.0%	5.5%	23.7%	32.6%
Ages 18–24	14.1%	15.1%	17.0%	12.4%	13.2%	17.5%	17.3%	3.8%	11.8%	16.3%	5.6%	28.3%	28.1%
Unmet need for prescriptions, past year													
Ages 10–17	3.5%	8.0%	4.3%	1.8%	2.5%	4.9%	5.9%	2.0%	3.5%	3.5%	2.1%	10.6%	12.9%
Ages 18–24	9.9%	12.1%	13.5%	7.5%	9.5%	13.2%	9.9%	3.0%	6.8%	13.1%	3.0%	18.9%	24.4%

Definitions of Indicators

- Full year insured: insured for full year prior to NHIS interview.
- Full year uninsured: uninsured for full year prior to NHIS interview.
- Partial year uninsured: uninsured for part of year prior to NHIS interview.
- Usual place when sick: place one usually goes to when he/she is sick or when parent needs advice about his/her health (no time frame)
- Had doctor visit, past year (besides hosp, ER, surg.): had a doctor visit in the past 12 months; does not include hospitalization, emergency room visit, home visit, dental visit or telephone call
- Had well check-up, past year: had a well-child check up, that is a general check-up, in past 12 months.

- Had 1+ ER visit, past year: went to a hospital emergency room one or more times in past 12 months; includes ER visits that resulted in a hospital admission.
- Dentist visit, past year: saw a dentist in past 12 months; includes all types of dentists and dental hygienists.
- Delay in care, past year: delayed in getting medical care in past 12 months.
- Unmet need for dental care past year: needed dental care but did not get it because could not afford it, in past 12 months
- Unmet need for prescriptions past year: needed prescription medicines but did not get because could not afford it, in past 12 months.

Definitions of Poverty Status:

- FPL lowest = ≤99% of the federal poverty level.
- FPL middle = 100–199% of the federal poverty level.
- FPL highest = ≥200% of the federal poverty level.

Source: [16] Public Policy Analysis and Education Center for Middle Childhood, Adolescent and Young Adult Health. National Health Interview Survey, 2006 [private data run]. Available at: http://www.cdc.gov/nchs/nhis.htm. Accessed March 18, 2009.

than one in four were overweight (body mass index [BMI] 25.0–29.9) and 16.2% were obese (BMI 30.0–99.8) (see Table 3 for BMI definition) [44].

Healthcare Utilization and Access

Adolescents and young adults rely primarily on outpatient care and have low rates of hospitalization. Table 4 provides data on healthcare access and utilization. Most adolescents and young adults saw a clinician and dentist in the past year, although dental visits were fairly low among young adults (60.6%) [16].

Conditions accounting for healthcare visits are fairly similar for adolescents and young adults [46]. Females' reproductive healthcare dominates service utilization. Pregnancy-related discharges are the leading cause of hospitalization among 15- to 24-year-olds [47]. Birth control and pregnancy-related services figure the most prominently in prescriptions and outpatient visits [46]. Trauma-related disorders and mental disorders were the second and third leading causes of hospital stays for adolescent and young adults. Males have higher rates of injury-related discharges [48]. Trauma-related disorders are the leading condition for emergency room visits [16]. Youths ages 15 to 24 have the highest rate of visits to emergency departments, after the very young (under age 4) and the elderly (ages 75+) [49].

Although sharing similar health concerns with adolescents, young adults face greater barriers in access to care. This is largely because of the loss of insurance in the late teens and early 20s (Figure 4), as young people lose their parents' coverage or eligibility for public insurance programs [16]. Young adults have the lowest rate of insurance of all age groups in the life span [50]. Among adolescents and young adults, Hispanics and the near-poor are less likely to be insured (see Table 4 for poverty definition). In young adulthood, males are less likely to be insured and fare worse than females on most measures of access. As with people of all ages, lack of insurance is associated with lower receipt of primary care, fewer past-year dental visits, and higher levels of unmet need [16].

Access to care is especially important among adolescents and young adults with special healthcare needs, as these youths use more services and are more affected by lack of access than peers without special needs. An estimated 16.8% of adolescents ages 12 to 17 have a special healthcare need, a figure that ranges depending on the criteria used [51]. An estimated 4.7% of young adults (ages 19–29) have a disabling chronic condition [52]. Access to care is challenging for youths with disabilities as they transition into adulthood [53–56]. Uninsured young adults with a disability are much more likely to report barriers to care such as delayed care because of costs and inability to afford a prescription compared with insured peers and uninsured young adults without a disability [52].

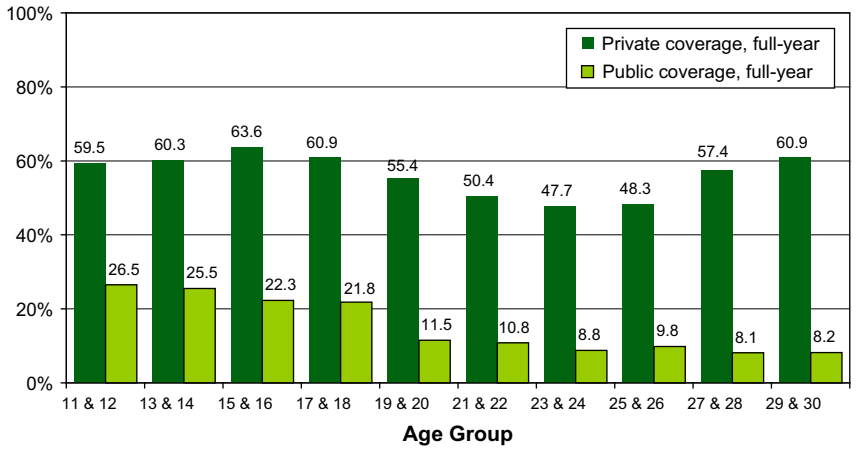

Figure 4. Full-year private versus public health insurance coverage by age group, 2006.
Source: [16] Public Policy Analysis and Education Center for Middle Childhood, Adolescent and Young Adult Health. National Health Interview Survey, 2006 [private data run]. Available at: http://www.cdc.gov/nchs/nhis.htm. Accessed March 18, 2009.

Discussion

Although this review shows improvement in several areas, concerns remain. Encouraging trends appear to be leveling off. Rates of MVA mortality, homicide, and suicide have changed little since the late 1990s. Since 2005, the teen birth rate increased for the first time since 1990. Moreover, these data show continuing disparities in almost all indicators of health. Blacks continue to have the highest homicide rates, and American Indians/Alaskan Natives have the highest suicide and MVA death rates. The worsening of nearly all indicators among young adults highlights the need for greater efforts for this population. Adolescents and young adults continue to face barriers in access to care. Young adults, especially those who rely on public programs, face greater challenges in the transition from adolescence.

National monitoring data are limited in several respects. Disparate age groupings remain a problem. Relative to adolescents, monitoring data for young adults are sparse [4], making it challenging to assess trends for most areas outside mortality and reproductive health. Although understanding disparities by race/ethnicity and gender is important, available monitoring data lack detail on socioeconomic status differences. National data are sparse for special populations of adolescents including rural youths; gay, lesbian, and bisexual youths; and youths in the foster care and juvenile justice systems [57]. Data for special populations of young adults are even more limited. Also lacking are data on family, school, and community contexts, all of which are known to influence outcomes among children, adolescents [58–60] and young adults [61].

Summary and Implications

This review presents a compelling case for strengthening policies, practices, and programs to improve health during these critical periods of the life span. Several national consensus reports call for comprehensive approaches to improve adolescent health [5,62–66]. However, many features of the nation's political system—including the categoric nature of funding and the mix of local, state, and federal jurisdiction over different aspects of policy—make it challenging to enact comprehensive reform. These features contribute to a fragmented system characterized by incremental change [67]. Nonetheless, adolescent health success stories exist [68]. State policies, including graduated drivers' licenses and ''zero alcohol tolerance'' laws, have contributed to reduced MVA fatalities among young drivers [69,70]. Over several decades, federal, state, and local governments have enacted policies to reduce tobacco use, many targeting youths, through public education and legislative and regulatory initiatives [71]. Tobacco use reduction stands out as an encouraging trend.

A recent report from the Institute of Medicine, *Adolescent Health Services: Missing Opportunities*, calls for improving healthcare services for adolescents. The report's recommendations include: strengthening content of primary care services to emphasize development, behavioral health, and disease prevention; further developing the adolescent health provider workforce; creating coordinated linkages to interdisciplinary services; protecting confidential care; and assuring financial access to needed services [72].

Research suggests room for improvement in all these areas. For example, despite broad professional consensus about content of clinical preventive services, reflected in the new *Bright Futures* [66], delivery of these services is low. A recent analysis shows that, among adolescents who had a past-year preventive visit, only 40% had time alone with their provider at their most recent visit [73]. This makes it unlikely that sensitive areas, such as sexuality, were addressed. Policies to improve workforce training, reimburse preventive services adequately and support systems interventions are needed. Improving quality of care for young adults requires even greater efforts. Few guidelines focus on young

adults [74]. There is no professional medical consensus similar to that found for adolescents, nor are there clinical training standards for this age group. A first step is to create guidelines and determine what training is needed to develop a skilled workforce.

Adolescents and young adults face significant financial barriers to services. One in seven adolescents and one in three young adults lack full-year coverage. Incremental steps for increasing insurance for young adults include extending adolescent safety net programs for vulnerable populations. Several states have taken advantage of Medicaid waiver options to extend eligibility for youths exiting the foster care system [75]. Several private, state, and local initiatives have expanded healthcare coverage for young adults [50,76].

Adolescents and young adults also face nonfinancial barriers to services. Access to mental health services, for example, is impeded by limited benefits packages and reimbursement policies that discourage screening in primary care [77]. Managed care arrangements often limit access to adolescent specialists and organize mental health services in a way that limits coverage of physical aspects of mental health disorders. Although many states have enacted policies, such as mental health parity laws, to increase access to mental health services, federal laws pre-empting state policies for certain insurers limit their effectiveness. Federal action is needed to improve access to these services.

The new administration presents opportunities for advancing a policy agenda for adolescents and young adults. One of the President's earliest acts was to sign legislation that expands the State Children's Health Insurance Program's coverage of children and adolescents. The President's proposed budget for Fiscal Year 2010 prioritizes healthcare reform, with emphasis on covering the uninsured, and services and workforce training for underserved populations. Outside the healthcare system, the 2010 budget supports reducing teen pregnancy through, ''efforts… using evidence based models [that] stress the importance of abstinence while providing medically-accurate and age-appropriate information to youth who have already become sexually active'' [78]. Priority on programs with evidence of positive outcomes appears throughout the proposed budget. The healthcare actions are consistent with the Institute of Medicine's recommendations and the sexuality education policy is consistent with professional recommendations [79–81]. These developments suggest greater opportunity to advance policies for adolescents and young adults. However, it will take significant advocacy and education to ensure that young people's special needs are met in efforts to reform the healthcare system and create a coordinated system of safety net and prevention programs.

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