

Underage Drinking in the United States: A Status Report, 2004

February 2005

The Center on
Alcohol Marketing and *Youth*

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Preface

This report on underage drinking in the United States by the Center on Alcohol Marketing and Youth at Georgetown University:

- brings together data that are now reported piecemeal,
- focuses and advances our current understanding of underage drinking, and
- seeks to prompt action by putting a spotlight on whether the nation is making progress in protecting our children by reducing underage drinking.

The landmark September 2003 study by the National Research Council and Institute of Medicine (NRC/IOM), *Reducing Underage Drinking: A Collective Responsibility*, called for an “annual report” by the U.S. Department of Health and Human Services. To date, no such report has been forthcoming. An “annual report” by HHS as recommended by the NRC/IOM would go beyond the scope of this report; the NRC/IOM called for the annual reporting of:

- funding levels for preventing underage drinking,
- activities supported by the funds,
- results from funded activities,
- data that measure progress in reducing underage drinking,
- data on brands drunk by youth and where alcohol was obtained,
- data on the reach of alcohol advertising to the underage population and entertainment portrayals of alcohol use, and
- future activities and any changes in strategy.¹

While funding levels, activities funded, and results achieved are beyond the scope of this report, and while data on brand preferences and sources of alcohol are still not collected and therefore not reportable, this report offers a template on how to bring existing data together to focus attention and prompt action to protect our children.

Executive Summary

By 1988, all 50 states and the District of Columbia had prohibited the sale of alcohol to anyone under the age of 21.² Yet alcohol is still the most commonly used drug by children and adolescents in the United States.³ The rates of underage drinking today remain too high, and the consequences too severe.

The nation made little progress, if any at all, in 2004 in its efforts to reduce underage drinking. Two major national public health surveys track underage drinking annually, and the results reported in 2004 from both surveys showed the nation at a standstill:

- Monitoring the Future (MTF) reported that in 2004 nearly one in five eighth-graders had a drink in the past month, as well as more than one in three 10th-graders and nearly one in two 12th-graders.⁴
- The National Survey on Drug Use and Health (NSDUH) reported that in 2003 approximately 10.9 million underage youth, ages 12 to 20, used alcohol in the month prior to the survey. Nearly 7.2 million underage youth also reported binge drinking, i.e., drinking five or more drinks on a single occasion at least once in the past 30 days.⁵

Other significant epidemiological findings about underage drinking that were reported in 2004 include:

- According to a September 2004 analysis by the Substance Abuse and Mental Health Services Administration (SAMHSA), 7,000 young people under 16 have their first drink of alcohol every day.⁶
- In May 2004, the U.S. Centers for Disease Control and Prevention (CDC) released survey data from 2003 showing that the gender gap among younger drinkers has closed, although other federal surveys show that the gap widens again by 12th grade.⁷ According to the CDC, more ninth- and 10th-grade girls currently drink than ninth- and 10th-grade boys. Ninth-grade girls are more likely than their male peers to binge drink as well.⁸
- According to MTF, 55.8% of high school seniors reported using “alcopops” in 2004, a level that is virtually unchanged from 2003. Among current drinkers, 78.5% of eighth-graders, 71.3% of 10th-graders, and 64.8% of 12th-graders reported drinking “alcopops” in the past month.⁹

Research findings on underage drinking reported in 2004 contributed to a new appreciation of the “developmental” impact of underage drinking and the critical need to reduce and prevent underage drinking:

- In November 2004, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) concluded that alcohol abuse and dependence are “developmental disorders.”¹⁰
- An analysis published in the November 15, 2004 issue of *Biological Psychiatry* stated that the onset of alcohol dependence peaks by 18 years of age.¹¹

The consequences of underage drinking can be both immediate, as in accidental injury or death, and long-term, as in the impact on adolescent brain development. Research findings reported in 2004 gave new insights in both areas.

- The Centers for Disease Control and Prevention (CDC) released in September 2004 a new annual estimate on the number of underage deaths due to excessive alcohol use: 4,554.¹²
- Brain researchers, using brain scanning technology, have identified how they believe alcohol use may cause loss of memory and other skills in adolescents.¹³

I. Underage Drinking: Trends and Scope

After substantial declines in the 1980s and the early 1990s, and despite substantial efforts in recent years to reduce youth access to alcohol at state and local levels, overall youth alcohol use has remained flat and at high levels over the past ten years, according to the NRC/IOM.¹⁴ MTF trends do show a modest decline after 2001, but the 2004 findings from that survey were described as “mixed,” perhaps raising a red flag.¹⁵ Underage alcohol use remains significantly higher than tobacco or marijuana use.¹⁶

Major findings in 2004 regarding underage drinking include the following:

Prevalence:

- In 2004, MTF found that nearly one out of five eighth-graders, more than one in three 10th-graders, and nearly one out of two 12th-graders were current drinkers.¹⁷

Figure 1:

Trends Among Eighth-, 10th- and 12th-Graders in Prevalence of Alcohol Use, Past 30 Days, Monitoring the Future, U.S., 1993-2004

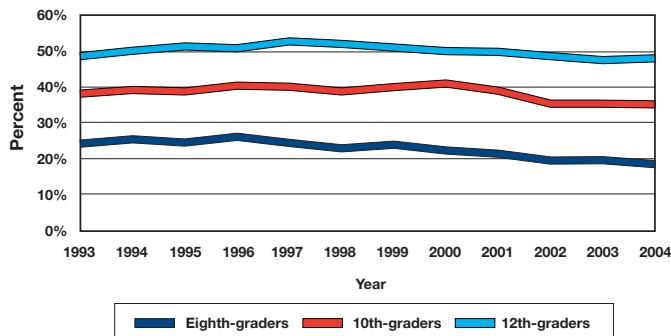


Figure 1A:

Trends Among Eighth-, 10th- and 12th-Graders in Prevalence of Beer Use, Past 30 Days, Monitoring the Future, U.S., 1993-2004

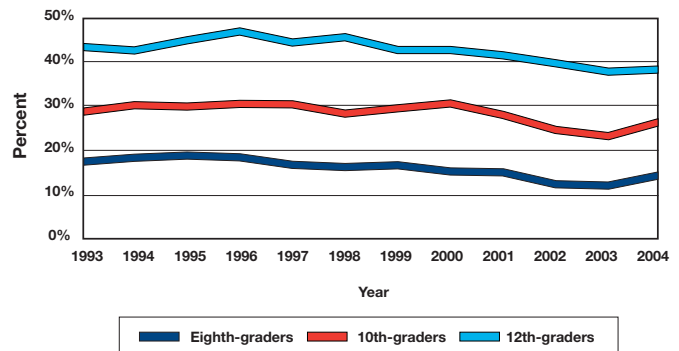
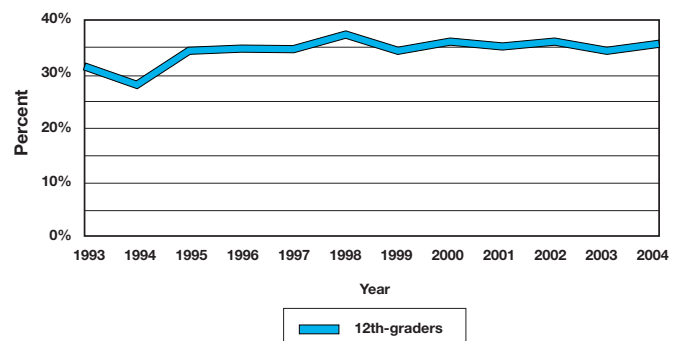


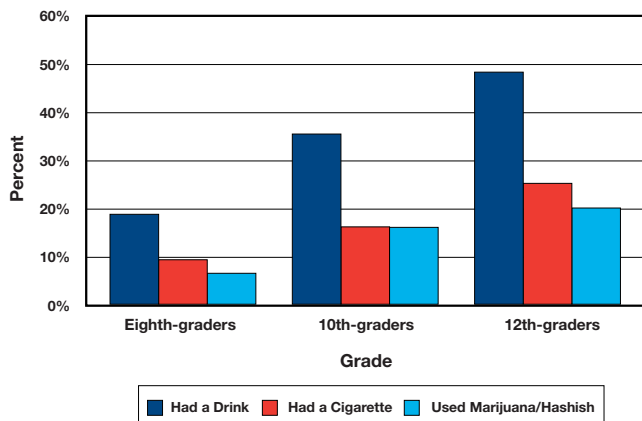
Figure 1B:

Trends Among 12th-Graders in Prevalence of Distilled Spirit Use, Past 30 Days, Monitoring the Future, U.S., 1993-2004



- Those same data revealed that nearly one in five 10th-graders and nearly one in three 12th-graders had been drunk at least once in the past month.¹⁸
- Trend analysis demonstrates that youth drinking prevalence in the past 10 years has remained generally either stable or has decreased, *except* for daily drinking by 10th-graders (according to MTF) and drinking five or more drinks in a row by 10th-graders (in CDC’s Youth Risk Behavior Surveillance System).¹⁹
- More youth in the United States drink alcohol than smoke tobacco or marijuana, making it the drug most used by American young people.²⁰ In 2004, 18.6% of eighth-graders had consumed alcohol within the previous 30 days, compared with 9.2% who had smoked cigarettes and 6.4% who had used marijuana.²¹

Figure 2:
Young People More Likely to Drink Than Smoke Cigarettes or Marijuana, Past 30 Days, Monitoring the Future, U.S., 2004

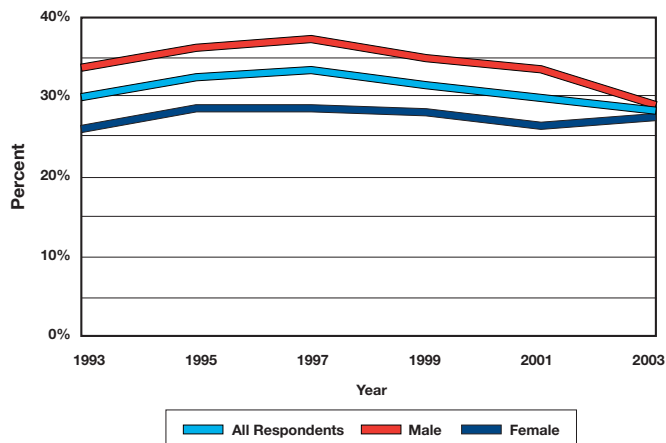


- Nearly 11 million underage youth, ages 12 to 20, reported drinking in the previous 30 days in 2003, according to the National Survey on Drug Use and Health (NSDUH) released in September 2004.²²
- Underage drinking is estimated to account for between 12% and 20% of the U.S. alcohol market.²³ Even the lower estimate represents 3.6 billion drinks each year.

Binge and Heavy Drinking:

- More than 7 million underage youth, ages 12 to 20, reported binge drinking in the past 30 days in 2003, according to NSDUH data released in September 2004.²⁴

Figure 3:
Binge Drinking (5+ Drinks on a Single Occasion at Least Once in the Past 30 Days) Among Ninth- Through 12th-Graders, Youth Risk Behavior Surveillance System, U.S., 1993-2003



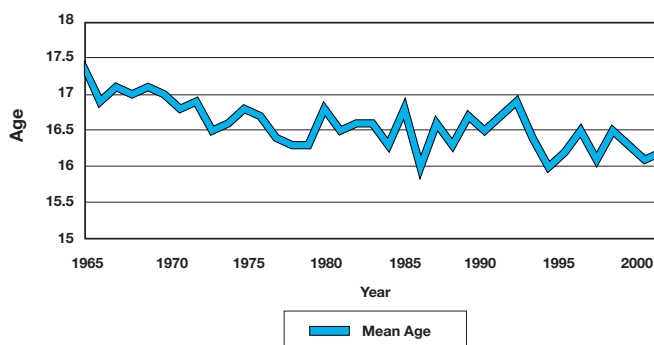
- By age 14, more than half of children who reported using any alcohol in the past month also reported having had five or more drinks on a single occasion in that same month.²⁵

- Ninety-two percent of the alcohol consumed by 12- to 14-year-olds is consumed when they are having five or more drinks on a single occasion.²⁶
- A National Institute on Alcohol Abuse and Alcoholism (NIAAA) report cites data from several surveys showing that four out of five college students drink and that, among these drinkers, about half engage in “heavy episodic consumption” (defined as having engaged in binge drinking at least once in the two weeks prior to the study).²⁷
- A study conducted by the Harvard School of Public Health also reports that two out of five undergraduate college students are binge drinkers, and that this rate has remained steady since 1993.²⁸

Initiation:

- According to the most recent data available from SAMHSA, the average age of initiation into alcohol use has gradually fallen from 1965 to 2001 (see Figure 4). In 2001, 88% of new drinkers were under 21.²⁹

Figure 4:
Mean Age of Persons Who First Used Alcohol in the Past Year, National Survey on Drug Use and Health, U.S., 1965-2001



- Regarding teenagers, according to analysis performed in 2004, the average age at which 12- to 17-year-olds began drinking is 13.³⁰
- The most recent data available from SAMHSA also reported that the number of people using alcohol for the first time each year has increased steadily since 1989. The total number of initiates significantly increased from 3.5 million to 5.0 million between 1995 and 1999. The number of teens (ages 12 to 17) drinking alcohol for the first time also significantly increased between 1995 and 2000—from 2.2 million to 3.1 million.³¹

Racial/Ethnic:

- Among youth ages 12 to 20 in 2003, Blacks and Asians were least likely to report past month alcohol use. Only 18.2% of Black and 18.2% of Asian youth were current drinkers, while rates were above 25% for other racial/ethnic groups.³²

Table 1:
Drinking Among Young People Ages 12 to 20 in the Past Month by Racial/Ethnic Group, National Survey on Drug Use and Health, U.S., 2003

Demographic Group	% Who Drank Alcohol in the Past 30 Days	% Who Binged in the Past 30 Days	% Who Binged on 5 or More Days in the Past 30 Days
White	33.2	22.8	8.0
Black or African American	18.2	9.1	1.6
American Indian or Alaska Native	26.0	20.8	4.0
Asian	18.2	9.6	3.1
Two or More Races	27.7	16.5	2.9
Hispanic or Latino	25.6	16.9	4.1

- Among persons ages 12 to 20, binge drinking was reported by 22.8% of underage Whites, 20.8% of underage American Indians or Alaska Natives, and 16.9% of underage Hispanics, compared with only 9.6% of underage Asians and 9.1% of underage Black youth.³³

Table 2:
Alcohol-Related Risk Behaviors Among Ninth- Through 12th-Graders, Youth Risk Behavior Surveillance System, U.S., 2003

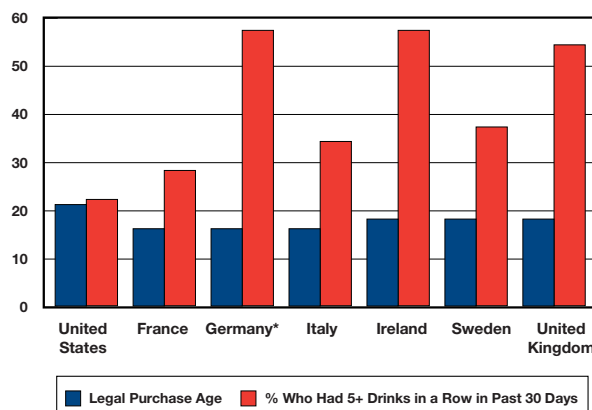
Demographic Group	% Who Drove After Drinking in the Past 30 Days	% Who Rode with a Drinking Driver in the Past 30 Days
White	12.9	28.5
Black	9.1	30.9
Hispanic	11.7	36.4
Other	12.1	29.0

- While White high school students were the most likely to report having driven after drinking, Hispanic and Black students were most likely to have ridden with a drinking driver in the past 30 days.³⁴

Comparison With Other Countries:

- Contrary to a common misperception, European countries with lower drinking ages are *less* successful than the United States at preventing heavy drinking among young people.³⁵
- Research released in 2004 shows that not only do youth in European countries have higher levels of alcohol consumption, but they also have higher levels of intoxication. Countries with lower drinking ages had substantially higher percentages of 15- to 16-year-olds who had five or more drinks in a row in the last 30 days:³⁶

Figure 5: Legal Purchase Age and Prevalence of Binge Drinking by 15- to 16-Year-Olds by Country, World Health Organization, 2004 and European School Survey Project on Alcohol and Other Drugs (ESPAD), 2003



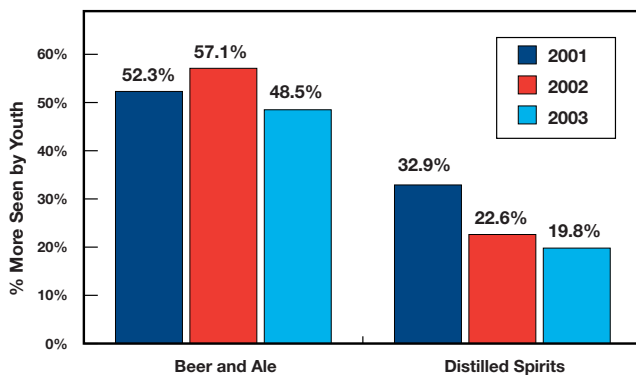
*Legal purchase age is 18 for spirits

Further, research evidence has shown that raising the minimum drinking age in the United States from 18 to 21 significantly decreased self-reported drinking, fatal traffic crashes, and DUI arrests among young people.³⁷

Alcohol Marketing and Underage Youth:

Underage youth are routinely exposed to a wide variety of alcohol advertising and marketing. The Center on Alcohol Marketing and Youth (CAMY) has monitored the scope and extent of this marketing and has issued reports since September 2002. Here are the most recent CAMY data on underage youth exposure to magazine alcohol advertising:³⁸

Figure 6:
Underage Youth Saw More Alcohol Ads Per Capita Than Adults in Magazines, Center on Alcohol Marketing and Youth, U.S., 2001 to 2003



II. Underage Drinking: Consequences

Underage drinking has profound consequences for young people, their families and their communities. The CDC reported in September 2004 that 4,554 people under age 21 died from excessive drinking in 2001.³⁹ Research confirms that the harm caused by underage drinking lasts beyond the underage years. Compared to persons who wait until age 21 or older to start drinking, those who start to drink at or before age 14 are, as adults, 12 times more likely to be unintentionally injured while under the influence of alcohol, seven times more likely to be in a motor vehicle crash after drinking, and at least 10 times more likely to be in a physical fight after drinking.⁴⁰

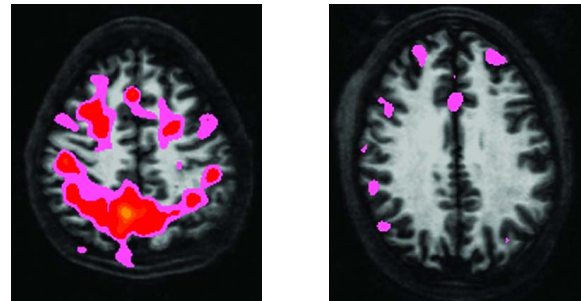
The following sections summarize the consequences of underage drinking, including those associated with brain activity, driving, violent crime and sexual activity.

New Developments—Drinking and the Adolescent Brain:

Scientists have only recently begun to recognize the serious and significant consequences that underage drinking can have for the brain. Recent studies have found that heavy exposure of the adolescent brain to alcohol may interfere with brain activity and brain development, causing loss of memory and other skills.⁴¹

Figure 7:
Images of Teen Brain Activity When Performing Memory Tests⁴²

15-Year-Old Male Non-Drinker 15-Year-Old Male Heavy Drinker



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- Magnetic resonance imaging of young adult and adolescent brains indicates that those with alcohol use disorders (alcohol dependence or alcohol abuse) have smaller hippocampal memory areas than do adolescent non-drinkers.⁴³
- One study found that young, alcohol-dependent 15- and 16-year-olds who drank heavily in early and middle adolescence performed worse on both verbal and non-verbal memory tasks than did their peers with no history of alcohol or other drug problems.⁴⁴
- Imaging studies also show that teens with alcohol use disorders have greater activity in areas of the brain previously linked to reward, desire, positive affect and episodic recall in response to alcoholic beverage advertisements, and that the degree of brain response was highest in youth who consumed more drinks per month and reported greater desires to drink.⁴⁵
- Both human (among 15- and 16-year-olds)⁴⁶ and animal (rat) studies have found that alcohol abusers have less recall than non-abusers. Memory problems among the rats studied showed up in adulthood: rats exposed to high levels of alcohol as adolescents had more trouble completing memory tasks as adults than those given alcohol at later ages.⁴⁷

Drinking and Driving Fatalities:

- Every day, three teens die from drinking and driving.⁴⁸
- According to the U.S. National Highway Traffic Safety Administration (NHTSA), 3,571 young drivers ages 16 to 20 died in motor vehicle crashes in 2003. Of these, 1,131—more than 31%—had been drinking.⁴⁹

Drinking and Non-Driving-Related Fatalities:

- Approximately six teens die every day of non-driving alcohol-related causes, such as homicide, suicide, and drowning.⁵⁰
- Alcohol intoxication has been reported to be involved in 47% of homicides⁵¹ and 22.7% of suicides involving people under 21—a total of 1,201 homicides and 479 suicides in 2001.⁵²

Drinking and Violent Crime:

- Young people under the age of 21 commit 45% of rapes, 44% of robberies, and 37% of other assaults, and it is estimated that 50% of violent crime is alcohol-related.⁵³
- On college campuses, 95% of all violent crime involves the use of alcohol.⁵⁴
- It is estimated that 1,400 college students died in 1998 from alcohol-related injuries and that 500,000 students were injured while under the influence of alcohol.⁵⁵

Drinking and Sexual Activity:

- It is estimated that in 1998 more than 70,000 college students were victims of alcohol-related sexual assault or date rape.⁵⁶
- Ninety percent of college rapes involve the use of alcohol by the assailant, victim, or both.⁵⁷
- Teenage girls who binge drink are up to 63% more likely to become teen mothers.⁵⁸

III. NRC/IOM Scorecard

In response to a congressional request in the fiscal 2002 appropriations act for the U.S. Department of Health and Human Services, the National Research Council and Institute of Medicine (NRC/IOM) formed a committee to review a broad range of federal, state and non-governmental programs and to develop a cost-effective and comprehensive strategy to reduce and prevent underage drinking. Relying on a review of the latest scientific literature, the committee determined that a strategy would need to create and sustain a broad societal commitment to reduce underage drinking, which will require participation by multiple individuals and organizations at the national, state, local, and community levels.⁵⁹

Among the NRC/IOM recommendations was a series aimed at the federal government. The following is an accounting of the status of the federal government's responses to those recommendations by the end of 2004.

**Table 3:
Recommendations for the Federal Government by the National Research Council and Institute of Medicine**

Recommendation	Status
1. A federal interagency coordinating committee on prevention of underage drinking should be established, chaired by the secretary of the U.S. Department of Health and Human Services (HHS).	The secretary of HHS does not currently chair an interagency coordinating committee. However, the administrator of SAMHSA, on direction of the secretary, has formed and chairs a lower-level Interagency Coordinating Committee on the Prevention of Underage Drinking (ICCPUD).
2. A National Training and Research Center on Underage Drinking should be established within HHS to provide technical assistance, training, and evaluation support and to monitor progress in implementing national goals.	No action.
3. The secretary of HHS should issue an annual report on underage drinking to Congress summarizing all federal agency activities, progress in reducing underage drinking, and key surveillance data.	No action.
4. The MTF survey and the NSDUH survey should be revised to elicit more precise information on the quantity of alcohol consumed and to ascertain brand preferences of underage drinkers.	CDC has provided questions about youth consumption of a limited number of brands as optional for states participating in YRBSS. The MTF grantee has recently stated that brand questions will likely not be added. ⁶⁰
5. HHS should monitor alcohol advertising and its reach to the underage population, as well as the portrayals of alcohol in a representative sample of the entertainment media likely to have significant youth audiences, and report back to Congress and the public.	No action. (In the past 15 years, HHS has issued occasional reports on media portrayals of alcohol and other drugs.)
6. All interventions, including media messages and education programs, whether funded by public or private sources, should be rigorously evaluated, and a portion of all federal grant funds for alcohol-related programs should be designated for evaluation.	Announced plan to create federal registry of effective programs in ICCPUD report to Congress. (Report dated November 2004 and sent to Congress in January 2005.) ⁶¹
7. The federal government (and states) should fund the development and evaluation of programs to cover all underage populations.	No action.

IV. Conclusion

Recent research findings in the United States suggest that adolescence is the critical point of intervention for the prevention of alcohol dependence, alcohol-related injury, and other alcohol-related problems. According to NIAAA Director Dr. Ting-Kai Li, the onset of alcohol dependence peaks at age 18, while occurrence of new cases drops dramatically after age 25.⁶² In 2004 testimony before Congress, Dr. Li stated that these findings have “led us to revise our entire perspective on alcohol dependence ... [and] suggest that youth, encompassing the time of maximum vulnerability, must necessarily be the critical window of opportunity.”⁶³

In the NRC/IOM’s report, Richard Bonnie, the chair of the committee responsible for preparing the report, stated:

“We have to resolve, as a national community, to reduce underage drinking and the problems associated with it and to take comprehensive measures to achieve this goal. If we do this without equivocation, there is a reasonable prospect of success. And success—measured in many thousands of young lives and futures saved—is well worth the investment.”⁶⁴

Data Collected by HHS on Underage Drinking

The federal government funds three major, annual national surveys in the United States that include data on underage drinking: the National Survey on Drug Use and Health (NSDUH), Monitoring the Future (MTF), and the Youth Risk Behavior Surveillance System (YRBSS). However, these surveys—each of which has its own advantages and disadvantages—do not use common indicators that would allow for direct comparison of youth alcohol consumption patterns. Following are some major findings reported from these surveys in 2004:

National Survey on Drug Use and Health (NSDUH):

Among the findings of the 2003 National Survey on Drug Use and Health released in September 2004:⁶⁵

- About half of Americans age 12 or older—an estimated 119 million people—reported being current drinkers of alcohol in the 2003 survey. An estimated 22.6% (54 million) participated in binge drinking in the past 30 days, and 6.8% (16.1 million) were heavy drinkers. (Heavy drinkers are defined as those who have five or more drinks on the same occasion on at least five different days in the past 30 days.) These figures are similar to those of 2002.
- Among young people, the prevalence of current alcohol use in 2003 increased with age: from 2.9% at age 12 to a peak of about 70% for 21- and 22-year-olds.
- Among youth ages 12 to 17, 17.7% used alcohol during the month prior to the survey, 10.6% were binge drinkers, and 2.6% were heavy drinkers; the binge and heavy drinking levels were very similar to those measured in 2002.
- It is estimated that 13.6% of persons age 12 or older drove under the influence of alcohol at least once in the 12 months prior to the survey in 2003. This represented 32.3 million persons in 2003. Driving under the influence varied by age group in 2003: about 9.7% of 16- and 17-year-olds and 20.1% of 18- to 20-year-olds drove under the influence.

The National Survey on Drug Use and Health, formerly the National Household Survey on Drug Abuse, is sponsored by the Substance Abuse and Mental Health Services Administration of the U.S. Department of Health and Human Services. It is an annual, general population, household survey conducted throughout the year. It is

conducted to provide reliable estimates of the prevalence of substance use, consequences of that use, and patterns of substance use in the United States. It surveys people 12 and over on an annual basis using a survey interview that is performed person-to-person in the respondent's place of residence. The survey uses both an interviewer-administered and self-administered format. This survey includes questions about the frequency of the consumption of alcoholic beverages, such as beer, wine, whiskey, brandy, and mixed drinks.

The advantage of the National Survey on Drug Use and Health is that it includes youth who are not in the school population. The disadvantage is that it fails to include youth who are institutionalized or homeless. Further, since the interview is conducted in the home—often with a parent present—it may inhibit truthful responses from youth.

Monitoring the Future (MTF):

Among the findings of the 2004 Monitoring the Future survey are:⁶⁶

- In 2004, 60.3% of 12th-graders and 19.9% of eighth-graders reported having been drunk at least once in their lives.
- 32.5% of 12th-graders, 18.5% of 10th-graders, and 6.2% of eighth-graders reported having been drunk in the past month.
- The 2002 survey showed drops in several indicators of alcohol use at all grade levels, but there has not been much further decline since then. In 2004 among 12th-graders, most drinking measures showed some increase in use (though none of the increases reached statistical significance).

The Monitoring the Future (MTF) Study is funded by the National Institute on Drug Abuse and conducted by the University of Michigan's Institute for Social Research. MTF has been tracking tobacco, alcohol and illicit drug use and attitudes toward drugs among students in the eighth and 10th grades since 1991 and among students in the 12th grade since 1975. In addition, college students and young adults are surveyed. The goal is to present the same set of questions over a period of years to see how answers change over time. In addition, annual follow-up questionnaires are mailed to a sample of each graduating class for a number of years after their initial participation. MTF is a nationally representative, school-based survey conducted every spring.

The advantages of the Monitoring the Future survey are that interviews are conducted with youth away from their parents and that it is comparable to the European survey data of school children. The disadvantage of this survey is that it only includes school children.

Youth Risk Behavior Surveillance System (YRBSS):

Among the findings of the 2003 Youth Risk Behavior survey released May 20, 2004:⁶⁷

- The prevalence of having drunk alcohol before age 13 years was higher among ninth-grade (36.4%) than 10th-grade (28.5%), 11th-grade (23.0%), and 12th-grade (20.3%) students.
- Nationwide, 27.8% of students had drunk alcohol (other than a few sips) for the first time before age 13 years.
- The prevalence of having drunk alcohol before age 13 years was higher among Black (31.2%) and Hispanic

(30.2%) students than among White (25.7%) students.

- Prevalence of having drunk alcohol before age 13 years ranged from 17.4% to 34.7% across state surveys.

The Youth Risk Behavior Surveillance System monitors alcohol use and other behaviors that contribute to unintentional injuries and violence. YRBSS includes a national school-based survey of high school students conducted biennially by CDC as well as state and local school-based surveys conducted by education and health agencies. YRBSS has been conducted since 1991. The latest national survey was conducted among students in grades nine through 12 in 2003.

The advantage of this survey is that a wide range of behaviors are tracked along with alcohol use. However, its disadvantages are that only schoolchildren are included, it is not nationally uniform, and it is only conducted once every two years.

References

- 1 National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 236.
- 2 P.O'Malley and A. Wagenaar, "Effects of Minimum Drinking Age Laws on Alcohol Use: Related Behaviors and Traffic Crash Involvement Among American Youth: 1976-1987," *Journal of Studies on Alcohol* 52 (1991): 478-491.
- 3 National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 35.
- 4 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), table 3. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 5 Substance Abuse and Mental Health Services Administration, *Overview of Findings from the 2003 National Survey on Drug Use and Health* (Rockville, MD: Office of Applied Studies, 2004), 14. Available at <http://oas.samhsa.gov/NHSDA/2k3NSDUH/2k3OverviewW.pdf> (cited 25 January 2005).
- 6 Calculated using the 2003 National Survey on Drug Use and Health. J. Groerer of the Substance Abuse and Mental Health Services Administration, e-mail to David H. Jernigan, PhD, 14 September 2004.
- 7 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Monitoring the Future National Survey Results on Drug Use, 1975-2003: Volume I, Secondary School Students* (Bethesda, MD: National Institute on Drug Abuse, 2004), 106, 110, 114. Available at http://www.monitoringthefuture.org/pubs/monographs/vol1_2003.pdf (cited 25 January 2005).
- 8 Centers for Disease Control and Prevention, *Youth Online: Comprehensive Results*, using the Youth Risk Behavior Surveillance System. Available at <http://apps.nccd.cdc.gov/yrbss/> (cited 25 January 2005).
- 9 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), tables 3 and 18. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 10 Team on Underage Drinking, National Institute on Alcohol Abuse and Alcoholism, *Alcohol Consumption by Children and Adolescents: An Interdisciplinary Overview* (Bethesda, MD: NIAAA, 2004).
- 11 T.K. Li, B.G. Hewitt, and B.F. Grant, "Alcohol Use Disorders and Mood Disorders: A National Institute on Alcohol Abuse and Alcoholism Perspective," *Biological Psychiatry* 56, no. 10 (15 Nov 2004): 718-720.
- 12 L.T. Midanik et al., "Alcohol-Attributable Deaths and Years of Potential Life Lost—United States, 2001," *MMWR Weekly* 53, no. 37 (24 Sept 2004): 866-870.
- 13 S.A. Brown and S.F. Tapert, "Health Consequences of Adolescent Alcohol Involvement," in *Reducing Underage Drinking: A Collective Responsibility, Background Papers* [CD-ROM] (Washington, DC: National Academies Press, 2004), 383-401.
- 14 National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 37.
- 15 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), 6. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 16 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), tables 1, 2, 3. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 17 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), table 3. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 18 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), table 3. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 19 V.B. Faden, M.P. Fay, "Trends in Drinking Among Americans Age 18 and Younger: 1975-2002," *Alcoholism: Clinical and Experimental Research* 28, no. 9 (Sept 2004): 1388-1395.
- 20 National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 35.
- 21 L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), table 3. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).
- 22 Substance Abuse and Mental Health Services Administration, *Overview of Findings from the 2003 National Survey on Drug Use and Health* (Rockville, MD: Office of Applied Studies, 2004), 14. Available at <http://oas.samhsa.gov/NHSDA/2k3NSDUH/2k3OverviewW.pdf> (cited 25 January 2005).
- 23 Pacific Institute for Research and Evaluation, *Drinking in America: Myths, Realities, and Prevention Policy*, prepared in support of the Office of Juvenile Justice and Delinquency Prevention Enforcing the Underage Drinking Laws Program, U.S. Department of Justice (Calverton, MD: Pacific Institute for Research and Evaluation, 2002); S.E. Foster, R.D. Vaughan, W.H. Foster, J.A. Califano, "Alcohol Consumption and Expenditures for Underage Drinking and Adult Excessive Drinking," *Journal of the American Medical Association* 289, no. 8 (26 Feb 2003): 989-995.
- 24 Substance Abuse and Mental Health Services Administration, *Overview of Findings from the 2003 National Survey on Drug Use and Health* (Rockville, MD: Office of Applied Studies, 2004), 14. Available at <http://oas.samhsa.gov/NHSDA/2k3NSDUH/2k3OverviewW.pdf> (cited 25 January 2005).
- 25 R.L. Flewelling, M.J. Paschall, and C. Ringwalt, "The Epidemiology of Underage Drinking in the United States: An Overview," in *Reducing Underage Drinking: A Collective Responsibility, Background Papers* [CD-ROM] (Washington, DC: National Academies Press, 2004), 328.
- 26 Pacific Institute for Research and Evaluation, *Drinking in America: Myths, Realities, and Prevention Policy*, prepared in support of the Office of Juvenile Justice and Delinquency Prevention Enforcing the Underage Drinking Laws Program, U.S. Department of Justice (Calverton, MD: Pacific Institute for Research and Evaluation, 2002).
- 27 Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, *A Call to Action: Changing the Culture of Drinking at U.S. Colleges* (Bethesda, MD: NIAAA, 2002), 5.
- 28 H. Wechsler et al., "Trends in College Binge Drinking During a Period of Increased Prevention Efforts: Findings From 4 Harvard School of Public Health College Alcohol Study Surveys: 1993-2001," *Journal of American College Health* 50, no. 5 (March 2002): 203-217.
- 29 Substance Abuse and Mental Health Services Administration, *Results from the 2003 National Survey on Drug Use and Health: Detailed Tables* (Rockville, MD: Office of Applied Studies, 2004), table 4.16A. Available at <http://oas.samhsa.gov/nhsda/2k3tabs/PDF/Sect4peTabs15to20.pdf> (cited 27 January 2005).
- 30 Calculated using the 2003 National Survey on Drug Use and Health. J. Groerer of the Substance Abuse and Mental Health Services Administration, e-mail to David H. Jernigan, PhD, 14 Sept 2004.
- 31 Substance Abuse and Mental Health Services Administration, *Results from the 2001 National Household Survey on Drug Abuse: Volume I. Summary of National Findings* (Rockville, MD: Office of Applied Studies, 2002), 48. Available at <http://oas.samhsa.gov/nhsda/2k1nhsda/PDF/cover.pdf> (cited 27 January 2005).
- 32 Substance Abuse and Mental Health Services Administration, *Results from the 2003 National Survey on Drug Use and Health: Detailed Tables* (Rockville, MD: Office of Applied Studies, 2004), table G.25. Available at <http://oas.samhsa.gov/nhsda/2k3nsduh/2k3ResultsW.pdf> (cited 27 January 2005).
- 33 Substance Abuse and Mental Health Services Administration, *Results from the 2003 National Survey on Drug Use and Health: Detailed Tables* (Rockville, MD: Office of Applied Studies, 2004), table G.25. Available at <http://oas.samhsa.gov/nhsda/>

2k3nsduh/ 2k3ResultsW.pdf (cited 27 January 2005).

³⁴ Centers for Disease Control and Prevention, *Youth Online: Comprehensive Results*, using the Youth Risk Behavior Surveillance System. Available at <http://apps.nccd.cdc.gov/yrbss/> (cited 27 January 2005).

³⁵ National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 163.

³⁶ Björn Hibell et al., *The ESPAD Report 2003: Alcohol and Other Drug Use Among Students in 35 European Countries* (Stockholm: The Swedish Council for Information on Alcohol and Other Drugs [CAN], 2004); World Health Organization, *Global Status Report: Alcohol Policy* (Geneva: World Health Organization, 2004), 32-3.

³⁷ National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 161.

³⁸ Center on Alcohol Marketing and Youth, Unpublished analysis using TNS Media Intelligence/CMR and Mediarmark Research Inc.

³⁹ L.T. Midanik et al., "Alcohol-Attributable Deaths and Years of Potential Life Lost—United States, 2001," *MMWR Weekly* 53, no. 37 (24 Sept 2004): 866-870.

⁴⁰ R. Hingson and D. Kenkel, "Social, Health, and Economic Consequences of Underage Drinking," in *Reducing Underage Drinking: A Collective Responsibility, Background Papers* [CD-ROM] (Washington, DC: National Academies Press, 2004), 363.

⁴¹ S.A. Brown and S.F. Tapert, "Health Consequences of Adolescent Alcohol Involvement," in *Reducing Underage Drinking: A Collective Responsibility, Background Papers* [CD-ROM] (Washington, DC: National Academies Press, 2004), 383-401.

⁴² S. F. Tapert, G.G. Brown, S. Kindermann, E. Cheung, L.R. Frank and S.A. Brown, "fMRI measurement of brain dysfunction in alcohol dependent young women," *Alcoholism: Clinical and Experimental Research* 25 (2001): 236-245; S.F. Tapert, A.D. Schweinsburg, V.C. Barlett, M.J. Meloy, S.A. Brown, G.G. Brown and L.R. Frank, "BOLD response and spatial working memory in alcohol use disordered adolescents," *Alcoholism: Clinical and Experimental Research* 28 (2004): 1577-1586.

⁴³ M.D. De Bellis et al., "Hippocampal volume in adolescent-onset alcohol use disorders," *The American Journal of Psychiatry* 157, no. 5 (May 2000): 737-44.

⁴⁴ S.A. Brown, S.F. Tapert, E. Granholm, D.C. Delis, "Neurocognitive Functioning of Adolescents: Effects of Protracted Alcohol Use," *Alcoholism: Clinical and Experimental Research* 24, no. 2 (February 2000): 164-71.

⁴⁵ S.F. Tapert et al., "Neural Response to Alcohol Stimuli in Adolescents With Alcohol Use Disorder," *Archives of General Psychiatry* 60, no. 7 (July 2003): 727-735.

⁴⁶ S.A. Brown, S.F. Tapert, E. Granholm, D.C. Delis, "Neurocognitive Functioning of Adolescents: Effects of Protracted Alcohol Use," *Alcoholism: Clinical and Experimental Research* 24, no. 2 (February 2000): 164-71.

⁴⁷ A.M. White, A.J. Ghia, E.D. Levin, and H. Scott Swartzwelder, "Binge Pattern Ethanol Exposure in Adolescent and Adult Rats: Differential Impact on Subsequent Responsiveness to Ethanol," *Alcoholism: Clinical and Experimental Research* 24, no. 8 (August 2000): 1251-6.

⁴⁸ National Highway Traffic Safety Administration, *Traffic Safety Facts 2003* (Washington, DC: National Center for Statistics and Analysis, U.S. Department of Transportation, 2005), table 79.

⁴⁹ National Highway Traffic Safety Administration, *Traffic Safety Facts 2003* (Washington, DC: National Center for Statistics and Analysis, U.S. Department of Transportation, 2005), table 79.

⁵⁰ Calculated using Alcohol-Related Disease Impact (ARDI) data, Centers for Disease Control and Prevention. Data include only deaths for ages 15 to 20. M. Stahre of the Centers for Disease Control and Prevention, e-mail to David H. Jernigan, PhD, 20 December 2004.

⁵¹ D.R. English, C.D.J. Holman, E. Milne et al., *The Quantification of Drug Caused Morbidity and Mortality in Australia* (Canberra: Commonwealth Department of Human Services and Health, 1995).

⁵² Calculated using Alcohol-Related Disease Impact (ARDI) data, Centers for

Disease Control and Prevention. Data include only deaths for ages 15 to 20. M. Stahre of the Centers for Disease Control and Prevention, e-mail to David H. Jernigan, PhD, 20 December 2004; See also G.S. Smith, C.C. Branas, and T.R. Miller, "Fatal Nontraffic Injuries Involving Alcohol: A Metaanalysis," *Annals of Emergency Medicine* 33, no. 6 (June 1999): 662.

⁵³ D.T. Levy, T.R. Miller, and K.C. Cox, *Costs of Underage Drinking*, prepared in support of the Office of Juvenile Justice and Delinquency Prevention Enforcing the Underage Drinking Laws Program, U.S. Department of Justice (Calverton, MD: Pacific Institute for Research and Evaluation, 1999), 4; National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 61.

⁵⁴ Commission on Substance Abuse at Colleges and Universities, *Rethinking Rites of Passage: Substance Abuse on America's Campuses* (New York City: The National Center on Addiction and Substance Abuse, 1994), ii. Available at http://www.casacolumbia.org/pdshopprov/files/rethinking_rites_of_passage_6_1_94.pdf (cited 28 January 2004).

⁵⁵ R.W. Hingson et al., "Magnitude of Alcohol-Related Mortality and Morbidity among U.S. College Students Ages 18-24," *Journal of Studies on Alcohol* 63, no. 2 (March 2002): 136-44.

⁵⁶ R.W. Hingson et al., "Magnitude of Alcohol-Related Mortality and Morbidity among U.S. College Students Ages 18-24," *Journal of Studies on Alcohol* 63, no. 2 (March 2002): 136-44.

⁵⁷ Commission on Substance Abuse at Colleges and Universities, *Rethinking Rites of Passage: Substance Abuse on America's Campuses* (New York City: The National Center on Addiction and Substance Abuse, 1994), ii. Available at http://www.casacolumbia.org/pdshopprov/files/rethinking_rites_of_passage_6_1_94.pdf (cited 28 January 2004).

⁵⁸ T.S. Dee, "The Effects of Minimum Legal Drinking Ages on Teen Childbearing," *The Journal of Human Resources* 36, no. 4 (2001): 824-838.

⁵⁹ National Research Council and Institute of Medicine, *Reducing Underage Drinking: A Collective Responsibility*, R.J. Bonnie and M.E. O'Connell, eds. (Washington, DC: National Academies Press, 2004), 2.

⁶⁰ Lloyd D. Johnston of University of Michigan Institute for Social Research, e-mail to David H. Jernigan, PhD, 17 December 2004.

⁶¹ U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Report to Congress: Interim Report on the Development of a Plan for Combating Underage Drinking* (Rockville, MD: SAMHSA, November 2004).

⁶² T.K. Li, B.G. Hewitt, and B.F. Grant, "Alcohol Use Disorders and Mood Disorders: A National Institute on Alcohol Abuse and Alcoholism Perspective," *Biological Psychiatry* 56, no. 10 (15 Nov 2004): 718-720.

⁶³ T.K. Li, M.D., Director of NIAAA, Statement before the House Appropriations Committee, Subcommittee on Labor, HHS and Education during Fiscal Year 2005 Appropriations Hearing, 29 April 2004.

⁶⁴ R. J. Bonnie, Preface, *Reducing Underage Drinking: A Collective Responsibility*, (Washington, DC: National Academies Press, 2004), xvi.

⁶⁵ Substance Abuse and Mental Health Services Administration, *Results from the 2003 National Survey on Drug Use and Health: Detailed Tables* (Rockville, MD: Office of Applied Studies, 2004). Available at <http://oas.samhsa.gov/nhsda/2k3nsduh/2k3ResultsW.pdf> (cited 27 January 2005).

⁶⁶ L.D. Johnston, P.M. O'Malley, J.G. Bachman, and J.E. Schulenberg, *Overall teen use continues gradual decline; but use of inhalants rises* (Ann Arbor, Mich: University of Michigan News and Information Services, December 21, 2004), tables 1, 2, 3. Available at <http://www.monitoringthefuture.org/data/04data.html#2004data-drugs> (cited 25 January 2005).

⁶⁷ Centers for Disease Control and Prevention, *Youth Online: Comprehensive Results*, using the Youth Risk Behavior Surveillance System. Available at <http://apps.nccd.cdc.gov/yrbss/> (cited 27 January 2005).

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