Alcohol Consumption and Expenditures for Underage Drinking and Adult Excessive Drinking

Susan E. Foster, MSW
Roger D. Vaughan, MS, DrPH
William H. Foster, PhD
Joseph A. Califano, Jr, LLB

Alcohol is the leading drug of abuse by teenagers in the United States. Although rates of alcohol use for persons aged 12 years or older have declined in the past 20 years, 72.9% in 1979 compared with 63.7% in 2001,1 teenage drinking rates have declined little in the last decade.2 Teenage drinking can physically damage the brain; interfere with mental and social development; interrupt academic progress; increase chances of risky sexual behavior and teenage pregnancy, juvenile delinquency, and crime; compromise health; and result in unintentional injury and death.3-5 Seventy-eight percent of high school students have tried alcohol (ie, had at least 1 drink of alcohol other than sips of wine for religious purposes) and more than 5 million (30%) admit to binge drinking at least once a month.6 A particularly disturbing trend is that initiation of use has occurred at a younger age,1 increasing the chances that teenagers will become adult heavier drinkers with alcohol problems later in life.7,8 The proportion of children who begin drinking in eighth grade or earlier increased by 33% from 1975 to 2001.2 The 2000 National Household Survey on Drug Abuse (NHSDA) showed that the mean (SD) age of initiation of use among 12- to 20-year-olds is now 14 years (2.8).9 Individuals who begin drinking before 15 years are 4 times more likely to become alcohol dependent than those who do not drink before 21 years.8 The incidence of lifetime alcohol abuse and dependence is greatest for those who begin drinking between the ages of 11 and 14 years.7 The US Departments of Agriculture (USDA) and Health and Human Services (DHHS) have established dietary guidelines of no more than 1 drink a day for most women and 2 drinks a day for most men.10

For editorial comment see p 1031.
on Alcohol Abuse and Alcoholism (NIAAA) uses these guidelines and further recommends that persons aged 65 years or older drink no more than 1 drink a day. Nevertheless, those who drink more than this amount (i.e., excessive drinking) is linked to serious health problems including increased risk for motor vehicle crashes, other injuries, high blood pressure, stroke, violence, suicide, and certain types of cancer. Heavy alcohol use is the most important risk factor for liver disease in the United States. As much as half of violent crime, including murder, rape, assault, child molestation, and spouse abuse, is connected with concurrent alcohol abuse. Even 1 drink per day can slightly raise the risk of breast cancer, result in birth defects when consumed by pregnant women, and impair one’s ability to drive.

No research to date has documented consumer expenditures of underage drinking and adult excessive drinking. Eigen and Noble and others have used the NHSDA to estimate the share of alcohol consumed by persons aged 12 to 20 years. However, a considerable body of research demonstrates that the NHSDA substantially underestimates the proportion of those younger than 21 years who drink and the amounts they consume, and the Substance Abuse and Mental Health Services Administration (SAMHSA), which administers the NHSDA, acknowledges this underestimation. In 1981, Gerstein estimated that the highest 10% of the population drank 57% of the alcohol and, in 1984, Cook estimated that if the highest 10% of drinkers reduced their consumption to the level of the ninth decile, total sales would decrease by more than 33%. Greenfield and Rogers found that the heaviest adult drinkers aged 18 years or older (highest 2.5%) drink 27% of all the alcohol consumed in the United States. Although these calculations suggest that the alcohol industry’s financial viability depends to a great extent on alcohol consumption by heavy drinkers, these authors do not distinguish between underage and adult drinkers, and these calculations are not linked directly to the moderate drinking standard of the federal dietary guidelines.

We consider the share of alcohol consumed by underage drinkers and adult excessive drinkers and the value of such drinking to the alcohol industry in terms of consumer expenditures for alcohol.

METHODS

Data Sources and Measures

To calculate the amount and relative proportion of drinks consumed by underage and adult drinkers, estimates of numeric quantities were needed: the proportion of each age-category that drinks within the past 30 days, the mean number of days within the period that alcohol was consumed, the mean number of drinks consumed on a drinking day, and the total number of people within each age category. The 2000 US Census was used to estimate the number of persons in each age category. The other 3 data sources used for this analysis included 217,192 persons aged 12 years or older. To calculate consumer expenditures (the amount of money spent by individual drinkers for alcohol) associated with underage, adult, and adult excessive drinking (>2 drinks per day), estimates of various numeric quantities were needed: the total number of drinks sold, the proportion of alcohol that underage, adult, and adult excessive drinkers consume, the percentage of each type of drink (beer, distilled spirits, and wine) consumed by each group, and the cost of each drink type.

Proportion of Underage Drinking

Three national data sets from 1999 (the most recent year for which the necessary relevant data have been compiled and released by the DHHS) provide estimates of the proportion of those younger than 21 years who drink: the NHSDA, Monitoring the Future (MTF), and the Youth Risk Behavior Survey (YRBS).

The NHSDA, administered by the SAMHSA, is a sample of 25,612 persons aged 12 to 20 years and 27,948 persons aged 21 years or older. The survey is conducted in the home. For underage participants, a parent is present in the home but not necessarily in the room where the interview is conducted.

The MTF, administered by the National Institute on Drug Abuse, is a sample of 17,287 8th graders, 13,885 10th graders, and 14,056 12th graders. The survey is administered in schools. When the survey is conducted, names and addresses of participants are collected on a separate sheet and identifying numbers are assigned to the name and the corresponding record so that follow-up can be made to correct the data if needed.

The YRBS, administered by the Centers for Disease Control and Prevention (CDC), is a sample of 15,349 persons in the 9th through 12th grades, with observed ages from 12 to 18 years (if participating high school students are older than 18 years, they are recoded as 18-year-olds). The survey is administered in the schools and is anonymous.

After careful examination of each data source, the YRBS data (representing ages 12 to 18 years) were determined to be the most accurate for purposes of estimating the proportion of underage individuals (ages 12 to 20 years) who drank in the past 30 days. The NHSDA tends to underestimate the proportion of underage drinkers who consume alcohol and the amounts they consume compared with the MTF and the YRBS. As an example, comparing estimates derived using 1997 data, MTF estimates were 40% higher and YRBS estimates were 90% higher than the estimates of past 30-day drinking among 12th graders derived from the NHSDA. In addition, because the NHSDA is based on personal interviews performed in a household and children are only interviewed when a parent is in the home, the accuracy of the responses may be suspect. The SAMHSA acknowledges this limitation on its Web site. Finally, the YRBS may provide more accurate estimates than MTF of the proportion of indi-
Proportion of Adult Drinkers

To determine the proportion of adults who drank alcohol in the past month, 2 national data sets were considered: the NHSDA and the Behavioral Risk Factor Surveillance Survey (BRFSS) administered by the CDC. The BRFSS is a telephone survey administered annually and includes a sample of 159,989 persons aged 18 years or older, including 148,283 aged 21 years or older.

The proportions of adults that both surveys identify as past 30-day drinkers were similar, suggesting that the results are reasonably reliable, even though they may underestimate the proportion of adults who drink because they exclude individuals in the military, those institutionalized, and homeless individuals. The similarity in results also indicates that, although underreporting is a problem for all self-report surveys, the NHSDA may not reflect the same extent of underreporting bias for adults as it does for underage drinkers.

The BRFSS data were used to determine the proportion of adults who drink, because it provided a method of calculating the proportion of those aged 21 years or older who drink that parallels the YRBS data, which were used to calculate the proportion of those underage who drink (both are CDC data sets).

Amount of Alcohol Consumed by Underage Drinkers

The NHSDA asks the following questions to determine the amount of alcohol consumed by underage drinkers: “Think specifically about the past 30 days—that is, since [fill in date], up to, and including today. During the past 30 days, on how many days did you drink 1 or more drinks of an alcoholic beverage?” and “On the days when you drank during the past 30 days, how many drinks did you usually have? Count as a drink a can or bottle of beer; a wine cooler or a glass of wine, champagne, or sherry; a shot of liquor or mixed drink or cocktail.”

The YRBS does not ask comparable questions from which to compute the amount of alcohol consumption. The only YRBS questions that were asked relating to amount of alcohol were “During the past 30 days, on how many days did you have at least 1 drink of alcohol? A, 0 days; B, 1 or 2 days; C, 3 to 5 days; D, 6 to 9 days; E, 10 to 19 days; F, 20 to 29 days; or G, all 30 days.” and “During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours? A, 0 days; B, 1 day; C, 2 days; D, 3 to 5 days; E, 6 to 9 days; F, 10 to 19 days; or G, 20 or more days.” Therefore, data from the NHSDA were used to calculate the amount of alcohol that underage drinkers consume.

Amount of Alcohol Consumed by Adult Drinkers

The questions that NHSDA asks adults to determine the amount of alcohol consumed are identical to those it asks underage drinkers. The BRFSS asks a comparable question related to the quantity of alcohol consumed: “A drink is 1 can or bottle of beer, 1 glass of wine, 1 can or bottle of wine cooler, 1 cocktail, or 1 shot of liquor. On the days when you drank, about how many drinks did you drink on average?” The BRFSS does not, however, ask a comparable question related to the frequency of consumption: “During the past month, how many days per week did you drink any alcoholic beverage, on the average?” The BRFSS records the response as days per week or days per month. When frequency is reported in weeks, an estimate must then be made of the number of days per month in which drinking occurred by multiplying by 4.333. Therefore, for the methodological reasons cited above and to maintain consistent data sources where possible between underage and adult drinkers, the NHSDA was used to calculate the amount of alcohol that adult drinkers consume.

Consumer Expenditures for Underage Drinking and Excessive Adult Drinking

To estimate consumer expenditures linked to underage, adult, and adult excessive drinking, the total amount in gallons and liters of beer, distilled spirits, and wine consumed by each group in 1999 was calculated using data from the alcohol industry published by Adams Business Research (ABR). The ABR is composed of experts in alcohol sales, market research, and finance and maintains up-to-date data on alcohol consumption and expenditures in the United States.

Guided by analyses by Rogers and Greenfield who analyzed data from adults in the highest 2.5% of the distribution of alcohol consumption and by a definition of adult excessive drinking as more than the recommended federal dietary guideline for men, adult drinkers were classified into 3 categories: adult heaviest drinkers, defined as those in the highest 2.5% of alcohol consumption; other adult excessive drinkers, defined as those who drank less than the highest 2.5% but more than 2 drinks per day; and adult moderate drinkers, defined as those who drank 2 drinks per day or less. For purposes of this analysis, adult excessive drinkers were defined as drinking more than 2 drinks a day, even though the dietary guidelines and NIAAA recommend no more than 1 drink a day for most women and 2 drinks a day for most men, and NIAAA recommends no more than 1 drink a day for persons aged 65 years or older.

It also was necessary to estimate the proportion of the type of drink (beer vs distilled spirits vs wine) consumed within age groups (these proportions may differ for underage vs adult drinkers) and across adult drinker types (adult excessive drinkers may have different drinking patterns than adult moderate drinkers) because of the price differences of these beverages. No research documenting the proportions of alcoholic beverages consumed by underage drinkers that are beer, distilled spirits, and wine is available. How-
ever, Rogers and Greenfield have documented that adult drinkers who have consumed 5 or more drinks in 1 day in the past year drink 80% beer, 16% distilled spirits, and 4% wine. They also report that mean consumption among those 18 years or older is 67% beer, 20% distilled spirits, and 13% wine. The pattern of alcohol consumption for underage drinkers appears more similar to adult drinkers who drink 5 or more drinks in 1 day compared with average adult drinkers. That is, when underage drinkers drink, they consume a mean (SD) of 3.85 (6.32) drinks on each drinking day compared with a mean (SD) of 3.33 (4.60) drinks for adult drinkers. Therefore, underage drinkers may be more likely to drink more beer than distilled spirits or wine. Underage and the adult heaviest drinkers also may be more sensitive to price than other drinkers, also skewing consumption toward beer that is less expensive. We therefore assumed that underage and adult heaviest drinkers drink 80% beer, 16% distilled spirits, and 4% wine, although other adult excessive and adult moderate drinkers drink 67% beer, 20% distilled spirits, and 13% wine.

**Statistical Analysis**

To calculate the proportion of alcohol consumed by underage and adult drinkers, variables within the selected data sets were used to compute the necessary quantities. First, the responses to the NHSDA questions about the quantity (the mean [SD] number of drinks that an individual usually consumed) and frequency (the number of days on which that individual drank in the past 30 days) of alcohol consumed were multiplied for each individual in the sample, and the average number of drinks consumed in the past month within each age group was computed. The decision was made to use the actual responses reported by the individual, rather than to use imputed values available for use within the data set. Additionally, if the number of drinks per day was higher than 50 (0.2% of the total sample or n = 31 underage drinkers, and n = 50 adult drinkers reported values >50), it was recorded as missing. This was used as the cutoff in previous NHSDA data sets.

The mean drinking amount for underage and adult drinkers was then multiplied by the proportion of each age group (underage and adult) that drank in the past 30 days (estimated from the YRBS and BRFSS, respectively), and by the total number of people in each age group as per the 2000 census information. The amount of alcohol consumed among underage drinkers was added to the computed amount for adult drinkers to arrive at the total number of drinks consumed. Division of each age-specific amount by the total produced the proportion of drinks consumed by each age category.

Based on these derived estimates of the proportion of alcohol consumed by underage and adult drinkers, subsequent analyses were also performed of the value in consumer expenditures for alcohol for underage drinking and adult excessive drinking. First, the total amount of beer, distilled spirits, and wine consumed in the United States in 1999 reported by ABR was converted to ounces of each beverage, and divided by the mean number of ounces by drink type (12 oz per beer, 1.2 oz per distilled spirits, and 5 oz per wine per drink as specified by the USDA and DHHS). This resulted in the total number of drinks per drink type.

The cost per drink was then calculated by taking the total consumer expenditures for beer, distilled spirits, and wine and dividing each amount by the total number of drinks of beer, distilled spirits, and wine, respectively. Consumer expenditures linked to alcohol consumed by underage, adult, and adult excessive drinkers were calculated by multiplying the overall proportion of drinks that each group consumed \times the proportion of that amount that was estimated to be beer, distilled spirits, or wine and finally \times the mean computed price per drink for beer, distilled spirits, and wine, respectively. The amounts expended on beer, distilled spirits, and wine were then summed to produce the total consumer expenditures for alcohol. Calculating weighted means by type of alcohol consumed for each category of drinker (underage, adult heaviest, other adult excessive, adult moderate) does not account for 2.8% of consumer expenditures for alcohol reported by ABR, because a higher percentage of less expensive beverages is consumed. To account for this missing value, it was distributed among drinking groups according to the proportion each consumed.

Expected reductions in consumer expenditures for alcohol were computed under the following conditions, assuming that there was no underage drinking and that all adult excessive drinkers changed their drinking habits so that they drank only 2 drinks per day.

All analyses were conducted using SAS version 8.1 (SAS Institute, Cary, NC), Stata version 7 (Stata Corp, College Station, Tex), and SPSS version 11.01 (SPSS Inc, Chicago, Ill), incorporating the appropriate weights in the analyses provided with each data set. No inferential hypotheses were tested.

**RESULTS**

**Alcohol Consumed by Underage and Adult Drinkers**

From the US Census 2000, the number of individuals aged 12 to 20 years (35.8 million or 12.7% of the population) and aged 21 years or older (196.9 million or 70.0% of the population) were obtained. Among those aged 12 years or older, 15.4% were aged 12 to 20 years and 84.6% were 21 years or older. The proportions of those underage and of adults who drank in the past 30 days were calculated as 50.0% and 52.8% using the YRBS and BRFSS, respectively. Using the NHSDA, for individuals aged 12 to 20 years, the mean (SD) number of drinking days per month, mean (SD) number of drinks on a drinking day, and mean (SD) number of drinks per month were 5.92 (3.10), 5.85 (6.32), and 46.34 (97.54), respectively; for individuals aged 21 years or older, the data were 8.33 (8.51), 3.30 (4.60), and 32.50 (78.63), respectively. Among the 12- to 20-year-olds...
who drink, those aged 12 to 14, 15 to 17, and 18 to 20 years have mean (SD) number of drinking days per month of 3.93 (4.68), 4.76 (5.78), and 6.73 (6.46); mean (SD) number of drinks on a drinking day of 4.11 (5.64), 5.90 (6.38), and 6.01 (6.33); and mean (SD) number of drinks per month of 27.30 (74.17), 41.40 (99.44), and 50.70 (98.40), respectively.

To calculate the shares of alcohol consumed monthly by underage and adult drinkers, the number of individuals in each group was multiplied by the proportion in each group who drank in the past 30 days, and by the mean number of drinks consumed in the past month by those in each group. As a result, the total number of drinks consumed was 4.21 billion per month. Individuals aged 12 to 20 years consumed 19.7% (830.6 million drinks per month) of all the alcohol consumed in the United States; those aged 21 years or older drank 80.3% (3.38 billion drinks per month).

### Consumer Expenditures for Underage Drinking

The total consumer expenditures by drink type were divided by the calculated number of drinks by type to derive the mean cost per drink type. These results are presented in Table 1. The total cost of beer consumed by underage drinkers was calculated by the overall proportion of drinks (0.197) × the proportion of that amount that was estimated to be beer (0.80) ÷ the total number of drinks (108.4 billion) × the mean price per beer ($0.98). This was repeated using the appropriate proportions for distilled spirits and wine, and the total expenditures are presented in Table 2. Underage drinkers consume 19.7% of all alcohol and are responsible for 19.4% of total consumer expenditures, reflecting the assumption that they are more likely to consume beer, a lower-priced beverage.

### Consumer Expenditures for Adult Excessive Drinking

Using the same model as underage drinkers, the total amount of consumer expenditures for alcohol by adult drinking type was calculated and presented in Table 2. As indicated, adult heaviest drinkers are responsible for 27.0% of the alcohol consumed and 26.6% of the consumer expenditures. Other adult excessive drinkers account for 19.5% of consumer expenditures and adult moderate drinkers account for 34.5% of consumer expenditures. The amount of alcohol consumed by adult excessive drinkers that is in excess of 2 drinks a day is 30.4% or $34.4 billion in consumer expenditures (data not shown).

### Eliminating Underage and Adult Excessive Drinking

If underage drinking is eliminated, consumer expenditures for alcohol would decrease by $22.5 billion. If the maximum federal dietary guidelines for men were followed by all adult drinkers, all the adults in the adult heaviest and in other adult excessive categories would consume 2 drinks per day. This would result in a large reduction in consumer expenditures. If all adult excessive drinkers were converted to moderate drinkers who consume 2 drinks a day, instead of spending $53.6 billion for alcohol, the expenditure would be $19.2 billion (Table 2). The loss of $34.4 billion in adult consumer expenditures for alcohol added to the loss of $22.5 billion in underage drinking would result in a loss of $56.9 billion or 48.9% of consumer expenditures.

### COMMENT

This analysis reveals the significant consumer expenditures attributable to underage drinking and adult excessive drinking. Conservatively, underage drinkers drank 19.7% of the alcohol consumed in the United States in 1999, accounting for $22.5 billion (19.4%) of the $116.2 billion in consumer expenditures that year on beer, distilled spirits, and wine. Adult excessive drinking accounted for 30.4% of the alcohol consumed or $34.4 billion (29.6%) of the $116.2 billion spent that year on alcohol. Combined, underage drinking and adult excessive drinking account for 50.1% of all the alcohol consumed in 1999. If underage drinking were eliminated, all moderate drinkers con-

---

### Table 1. Total Consumer Expenditures, Number of Drinks, and Cost per Drink by Beverage Type

<table>
<thead>
<tr>
<th>Beverage</th>
<th>Total Consumer Expenditures, $ in Millions</th>
<th>Total Drinks, in Millions</th>
<th>Mean Price per Drink, $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beer</td>
<td>63,850</td>
<td>65,453</td>
<td>0.98</td>
</tr>
<tr>
<td>Distilled spirits</td>
<td>35,770</td>
<td>29,269</td>
<td>1.22</td>
</tr>
<tr>
<td>Wine</td>
<td>16,600</td>
<td>13,713</td>
<td>1.21</td>
</tr>
</tbody>
</table>

### Table 2. Consumer Expenditures for Alcohol

<table>
<thead>
<tr>
<th>Consumer</th>
<th>Alcohol Consumed, %</th>
<th>Estimated Consumer Expenditures, $ in Billions (%)</th>
<th>Estimated Consumer Expenditures if No Underage or Adult Excessive Drinking, $ in Billions*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underage†</td>
<td>19.7</td>
<td>22.5 (19.4)</td>
<td>0</td>
</tr>
<tr>
<td>Adult heaviest‡</td>
<td>27.0</td>
<td>30.9 (26.6)</td>
<td>4.7</td>
</tr>
<tr>
<td>Other adult excessive§</td>
<td>19.3</td>
<td>22.7 (19.5)</td>
<td>14.5</td>
</tr>
<tr>
<td>Adult moderate¶</td>
<td>34.0</td>
<td>40.1 (34.5)</td>
<td>40.1</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>116.2 (100)</td>
<td>59.3</td>
</tr>
</tbody>
</table>

* Assumes all adult excessive drinkers reduce consumption to 2 drinks per day.
† Drinkers aged 12 to 20 years.
‡ Drinkers aged 21 years or older who drink more than the 2 drink a day maximum recommended by the federal dietary guidelines for men but less than the highest 2.5% of drinkers. These drinkers consume on average 12.7 drinks a day.
§ The remainder of adult drinkers aged 21 years or older who drink more than the 2 drink a day maximum recommended by the federal dietary guidelines for men and who represent the highest 2.5% of excessive drinkers. These drinkers on average consume 17 drinks a day.
¶ Drinkers aged 21 years or older who drink 2 drinks a day or less.
undertook to drink 2 drinks a day or less, and all adult excessive drinkers reduced consumption to 2 drinks a day, consumer expenditures for alcohol would have declined by 48.9% or $56.9 billion in 1999.

Our study has several limitations. First, the data source choices used to calculate the proportions of underage and adult drinking should be examined. If the NHSDA, which produces an underestimate of the proportion of youth who drink, had been used rather than the YRBS to calculate the proportion of underage individuals who drink, the resulting share of alcohol consumed by underage drinkers would have been 11.4% and the share consumed by adult drinkers would have been 88.6%. However, the point was to calculate the most accurate estimate and the overwhelming majority of published reports conclude that the NHSDA underestimates the true proportions of underage drinkers.

Selecting the estimate derived from the BRFSS rather than the NHSDA to estimate the proportion of adult drinkers actually results in a more conservative estimate of the percentage of alcohol consumed by underage drinkers. As the percentage and number of the adult drinkers increased, the adult share of alcohol consumed also increased. If the NHSDA had been used to calculate the proportion of adults who drink and the YRBS to calculate the proportion of those younger than 21 years who drink, the resulting share of alcohol consumed by adult drinkers would be 79.2% and the share consumed by underage drinkers would be 20.8%.

Although there was an assumption made that drinkers of different ages and types drink a different proportional mix of beer, wine, and distilled spirits, it is also possible that price preference operates as well. Younger drinkers and excessive drinkers may choose to purchase cheaper alcohol than do moderate drinkers. Although the choice of assumptions about the differential alcohol expenditure profile across age and drinker type could alter the expenditure findings, no credible estimates of this differential price preference were available.

These estimates may still be conservative for several reasons. Our calculation of the total number of drinks consumed based on survey data can only account for 50.5 billion dollars of the total number calculated from alcohol industry data (108.4 billion drinks), suggesting that respondents still underreport their drinking behavior. In addition, the YRBS may underestimate the proportion of individuals aged 12 to 20 years who drink. The YRBS excludes school dropouts, those in the military, those institutionalized, or homeless individuals. Moreover, the YRBS surveys only those through 12th graders; it does not intentionally survey 19- and 20-year-olds. Analysis of the BRFSS data show that 19- to 20-year-olds are more likely to drink (51.4% and 59.7%, respectively) than those aged 12 to 18 years. The decision to apply rates calculated from the YRBS (among 12 to 18-year-olds) to all those younger than 21 years results in an underestimate. In addition, the YRBS may underestimate alcohol use among those younger than 21 years, because it is based on self-reports as are most national data sources and young people typically underreport their substance use.20-22,24,28

Finally, our estimate of the amount of adult drinking that is excessive is based on the 2 drink a day maximum federal dietary guideline for men, double the 1 drink a day guideline for women, and the NIAAA’s recommended maximum for older persons.10,11,39,40

Despite these limitations, the public health implications of these findings are staggering. The costs to society of alcohol use and abuse are estimated to be $184.6 billion annually.41 Approximately 30% ($53 billion) is due to underage drinking in alcohol-related traffic crashes, violent crime, burns, drowning, suicide attempts, alcohol poisonings, fetal alcohol syndrome, and treatment for alcohol abuse. The human costs are incalculable. These analyses show that it is not in the alcohol industry’s financial interest to voluntarily enact strategies to reduce underage or adult excessive drinking. These findings signal the need for parental engagement and vigilance to prevent underage drinking, for government action at the federal, state, and local levels to inform and educate the public, and to take other steps to curb underage and adult excessive drinking. These steps might include mounting aggressive public health campaigns similar to those that address smoking and illegal drug use, increasing taxes on alcohol43-46, and enacting and enforcing tougher penalties on those who help minors obtain alcohol or on those who sell to minors.43-46 Action should also be taken to place restrictions on advertising and marketing of alcoholic beverages that target underage drinkers.3,47,48

Author Contributions: Study concept and design: SE Foster, Vaughan, WH Foster, Califano. Acquisition of data: SE Foster. Analysis and interpretation of data: SE Foster, Vaughan, WH Foster, Califano. Drafting of the manuscript: SE Foster, Vaughan, Califano. Critical revision of the manuscript for important intellectual content: SE Foster, Vaughan, WH Foster, Califano. Statistical expertise: Vaughan. Administrative, technical, or material support: SE Foster, WH Foster. Study supervision: SE Foster, Vaughan, WH Foster, Califano.

Acknowledgment: We thank Elizabeth Peters for her expert assistance with the data analysis, David Man, PhD, who provided library assistance, and Jane Carlsson, BS, for her help with manuscript preparation.

REFERENCES
37. Greenfield TK, Rogers JD. Beer drinking ac-
39. Johnston LD, Bachman JG, O’Malley PM. Moni-
This also could be consequent to increased oxidative stress and could augment the role of platelet activation in increasing the cardiovascular risk in obese patients.

Giovambattista Desideri, MD
Claudio Ferri, MD
Department of Internal Medicine and Public Health
University of L’Aquila
L’Aquila, Italy


CORRECTIONS

Incorrect Wording: In the Original Contribution entitled “Measuring Underuse of Necessary Care Among Elderly Medicare Beneficiaries Using Inpatient and Outpatient Claims” published in the November 8, 2000, issue of THE JOURNAL (2000;284:2325-2333), incorrect wording appeared in Table 1. Indicator 14 should have read “Visit every 6 mo for breast cancer patients who had mastectomy and received cytotoxic chemotherapy.”

Typographical Error: There was a typographical error that appeared in the Original Contribution entitled “Alcohol Consumption and Expenditures for Underage Drinking and Adult Excessive Drinking” published in the February 26, 2003, issue of THE JOURNAL (2003;289:989-995). On page 992, “1.2 oz per distilled spirits” should have read “1.5 oz per distilled spirits.” In addition, the authors’ analysis was conducted on the basis of 1.5 oz rather than the typographical error of 1.2 oz.

CME ANNOUNCEMENT

Online CME to Begin in Mid-2003

In mid-2003, online CME will be available for JAMA/Archives journals and will offer many enhancements:

- Article-specific questions
- Hypertext links from questions to the relevant content
- Online CME questionnaire
- Printable CME certificates and ability to access total CME credits

We apologize for the interruption in CME and hope that you will enjoy the improved online features that will be available in mid-2003.