

The Demographic Distribution of US Drinking Patterns in 1990: Description and Trends from 1984

ABSTRACT

Objectives. Since 1981, per capita consumption of alcohol (based on sales figures) has decreased in the United States. This study describes drinking patterns in the 1990 national alcohol survey by demographic correlates and assesses changes in drinking patterns from the 1984 survey.

Methods. Data were obtained from a national household probability sample within the 48 contiguous states; face-to-face interviews were conducted with 2058 adults. The instrument contained questions pertaining to the respondent's background, attitudes toward alcohol, and use of alcohol.

Results. The proportions of current drinkers; current drinkers of wine, beer, and liquor; weekly drinkers; and drinkers who reported having five or more drinks per occasion at least once a week were significantly lower in 1990 than in 1984. These changes remained significant when demographic characteristics were controlled by logistic regression. The findings held for Whites only; there were no significant trends for Blacks or Hispanics.

Conclusions. While there has been a downward turn in alcohol use in the United States, the correlates of alcohol use have not changed. How these shifts affect alcohol-related problems is an important area for future research. (*Am J Public Health*. 1994;84:1218-1222)

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Introduction

National alcohol-use surveys in the United States, beginning with the Gallup poll in 1939, originally aimed at differentiating drinkers from nondrinkers. Later surveys focused on a wide array of drinking practices within the US household population. From these data, researchers have examined correlates of different patterns of drinking and assessed trends within certain subgroups.¹

With the rise in per capita consumption indicated by sales data in the 1960s and 1970s, national surveys became important ways to monitor whether these increases were uniform throughout the population or within specific segments. Results were mixed. Johnson et al.² found in their analysis of seven national studies conducted from 1971 through 1976 that there was an overall increase in the proportion of heavier-drinking men and moderate-drinking women aged 35 through 49 years. Little change was detected in rates of abstention and rates of light, moderate, or heavy drinking in the US population in 1979,³ and the 1984 national alcohol survey found few significant differences between 1967 and 1984.⁴ An exception was a small increase in the number of male abstainers. Recently, Williams and Debaquey⁵ reported an increase in abstention and a decrease in heavier drinking between 1983 and 1988, based on National Health Interview Survey data.

Alcohol sales data through 1990 indicate that per capita consumption of alcohol fell from a high of 2.76 gallons per person aged 14 years or older in 1981 to 2.46 gallons in 1990—a change of nearly 11%. Liquor consumption fell from 1.02 to 0.78 gallons per person from 1981 to 1990, beer consumption fell from 1.39 to 1.34 gallons per person, and wine con-

sumption fell from 0.35 to 0.33 gallons per person.⁶ There are regional differences in apparent consumption of alcoholic beverages, but all census regions share in the downward trend in per capita consumption. However, useful as they are, per capita estimates obscure variations in drinking patterns and their correlates.

The purpose of this study is threefold. First, we will describe US drinking patterns in 1990 by demographic correlates. Second, we will compare the 1990 data on drinking patterns with comparable data from the 1984 survey to assess any changes in drinking patterns. Third, we will use multivariate analysis to determine whether the year of the survey is a significant predictor for any change in drinking patterns from 1984 to 1990 when demographic characteristics are controlled in the model.

Methods

Study Sample

The data were collected by the Institute for Survey Research of Temple University from a probability sample of 5970 housing units in 100 primary sampling units within the 48 contiguous states. Interviews were conducted from January through June 1990 with 2058 adults aged 18 years and older (70% response rate). The average length of an interview was 75 minutes, and respondents were paid \$10.

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This paper was accepted November 18, 1993.

The 1984 national alcohol survey oversampled Black and Hispanic respondents within the 100 primary sampling units, and an additional 10 sampling units were selected from geographical areas with high proportions of Black and Hispanic residents.¹

Weights were applied to both data sets to make them representative of the national household population in the United States during 1984 and 1990. First, a weight took into account demographic differences (age, sex, and region) and nonresponse rates. Second, an average design-effects weight based on selected alcohol use, alcohol-related problems, and demographic variables was derived, which takes into account clustering effects.⁷ For the 1990 survey, the average design-effects weight was 1.79, which reduced the effective sample size from 2058 to 1150. In 1984, the average design-effects weight was considerably higher (4.24) because of the oversampling of Black and Hispanic respondents. Thus, the effective sample size was reduced from 5221 to 1228.

Dependent Variables

The description of patterns of alcohol use is no simple task, as Room's discussion makes clear.⁸ Frequency of drinking, beverage type, quantity of alcohol per occasion, overall quantity, and volume per unit of time are all important measures for various purposes.

We used the following dichotomous measures of alcohol use during the 12 months preceding the interview: (1) current drinking (any alcoholic beverage use in the last year); (2) weekly drinking (any alcoholic beverage use at least weekly in the last year); current (3) wine, (4) beer, and (5) liquor drinking (any use of the beverage in the last year); and (6) five or more drinks (drinking five or more drinks on one occasion of any combination of alcoholic beverages weekly or more often during the last year).

The first two measures were based on an overall question about frequency of alcohol use: "How often do you usually have any kind of beverage containing alcohol, whether it is wine, beer, whiskey, or any other drink?" Measures 3 through 5 were based on similar questions about the frequency of use of each beverage type separately. Construction of the sixth measure was complex because there was no direct question that obtained this information. We used two questions, identical on both surveys, to construct the five or more drinks variable: "How often

TABLE 1—US Drinking Patterns: Percentages of 1984 and 1990 Survey Respondents Reporting Drinking Behaviors

	1984 (n = 5221)	1990 (n = 2058)	χ^2
Current drinking	69.6	65.0	5.54*
Current wine drinking	51.2	43.6	13.95**
Current beer drinking	51.5	45.3	9.35***
Current liquor drinking	51.8	43.5	16.46**
Weekly drinking	35.9	29.0	13.03**
Having 5+ drinks on one occasion at least weekly	6.2	3.9	6.49**

Note. Percentages are based on weighted sample sizes (effective n's of 1228 for the 1984 survey and 1150 for the 1990 survey).

* $P < .05$; ** $P < .01$; *** $P < .001$.

do you usually have wine or wine coolers?" and "Think of all the times you have had wine or wine coolers recently. When you drink wine, how often do you have as many as five or more glasses?" Parallel questions on beer and liquor were asked separately. (Details on the construction of this measure are available from the authors.)

Independent Variables

Eleven independent variables were used to describe the subgroups of the population: gender, age, marital status, ethnicity, income, employment status, religion, importance of religion, education, urbanicity, and region.

Analysis

Descriptive comparisons between surveys were made by using a two-tailed difference-of-proportions test for each of the six dependent variables and for comparing proportions between the two surveys within each subgroup of the independent variables. We merged the two data sets and ran logistic regressions on each dichotomous dependent variable to test whether the year of the survey was a significant predictor when the effects of differences in demographic characteristics in these two surveys were controlled.

Results

1990 Cross-Sectional Data

About one third of adults reported no use of alcoholic beverages in the year preceding the survey (Table 1)—although the rate of abstention may be increasing, as will be noted below. Approximately 40% of adults reported drinking each of the three types of beverages in the last year. Just under one third of adults

reported current use of any kind of alcoholic beverage as often as once a week, and a small proportion (3.9%) reported that they drank five or more drinks on one occasion at least as often as once a week.

Table 2 presents data on the use of any alcoholic beverage by demographic subgroups. Gender, as usual, was quite strongly associated with alcohol use. A statistically significantly lower proportion of women were current drinkers, weekly drinkers, or consumers of five or more drinks per occasion at least weekly. As in past surveys, age was negatively and significantly ($P < .05$) related to each of the measures of alcohol use and to the use of wine, beer, and distilled beverages considered separately.

Religious affiliation has been consistently associated with alcohol use in the United States. The religious groups here labeled conservative Protestants discourage the use of any alcoholic beverage by their members; other religious groups oppose only excessive use. Because of the small numbers, the comparisons presented here are of conservative Protestants vs all others. Significantly lower proportions of conservative Protestants reported current drinking, weekly drinking, and drinking five or more drinks per occasion. Respondents who reported that religion was "very important" in their lives were less likely than others to drink by all measures of use.

We found no statistically significant differences in alcohol use among ethnic groups. This finding is of considerable interest because race and ethnicity have been significantly associated with alcohol use in past surveys, with Whites reporting higher rates of alcohol use on many measures. Whites in the 1990 survey did

TABLE 2—Demographic Characteristics of Drinkers: 1984 and 1990

	1984 (n = 5221)	1990 (n = 2058)	Current Drinkers, %		Weekly Drinkers, %		Drinkers of Five or More Drinks, ^a %	
			1984	1990	1984	1990	1984	1990
Gender								
Male	2093	869	75.9	71.2	48.9	40.0*	10.6	6.5*
Female	3128	1189	63.9	59.4	24.4	18.8*	2.2	1.4
Age, y								
18–29	1515	442	77.8	73.1	40.1	32.2*	10.3	7.0
30–39	1277	520	77.6	70.7	42.3	30.0*	7.7	3.0*
40–49	711	330	68.9	68.4	33.5	29.0	4.6	3.8
50–59	593	228	66.1	61.9	36.9	32.8	4.2	3.3
60+	1092	538	53.5	49.4	25.5	22.4	1.2	1.5
Gender and age								
Male								
18–29 y	621	201	81.7	76.5	52.3	44.4	17.6	11.0
30–39 y	511	209	86.7	72.5*	60.0	39.2*	12.4	4.3*
40–49 y	305	146	77.5	71.8	44.7	38.5	6.0	6.8
50–59 y	235	102	70.7	64.6	48.4	43.5	8.7	6.2
60+ y	413	211	58.8	65.6	36.0	34.8	2.5	3.1
Female								
18–29 y	894	241	73.9	69.7	28.2	19.7	3.1	3.0
30–39 y	766	311	69.3	69.0	26.4	20.9	3.5	1.7
40–49 y	406	184	62.3	65.1	24.8	20.1	3.6	1.0
50–59 y	358	126	62.2	59.8	26.9	24.2	0.2	0.9
60+ y	679	327	48.9	37.0*	16.5	12.9	0.2	0.2
Marital status								
Married	2619	1191	68.5	65.7	35.0	28.1*	4.8	2.3*
Separated	367	84	74.8	69.2	38.4	19.9	4.3	.8
Divorced	554	221	71.9	69.0	38.5	36.1	7.2	7.9
Widowed	578	220	51.5	41.6	22.3	17.0	2.3	1.9
Never married	1101	341	78.8	69.6*	43.2	35.3	12.1	8.7
Ethnicity								
Black	1947	261	61.6	61.6	29.5	25.8	4.1	3.5
White	1777	1570	71.0	65.9*	37.3	30.2*	6.4	3.5*
Hispanic	1453	150	65.4	66.6	29.5	26.5	4.6	8.9
Other	44	77	64.1	57.0	31.0	21.6	11.1	1.4
Household income								
Above median	1463	913	78.2	73.8	42.6	31.7*	5.8	2.5*
Below median	3405	1031	62.0	56.1*	30.0	25.5	6.7	4.9
Employment status								
Work full-time	2456	1040	78.8	73.7*	44.1	35.2*	8.4	4.3*
Work part-time	452	241	72.6	65.6	34.6	18.9*	5.4	3.6
Retired	717	343	53.0	51.7	23.9	25.1	1.2	2.0
Homemaker	892	227	52.3	44.2	19.8	12.8	1.9	1.1
Other	702	207	66.2	59.9	34.5	30.4	8.5	7.3
Religion								
Catholic	1730	510	82.5	78.6	43.0	37.3	8.5	6.7
Jewish	58	36	88.2	91.8	50.6	30.2	.3	0
Liberal Protestant ^b	412	360	83.4	72.6*	47.6	36.1*	5.4	1.0*
Conserv Protestant ^c	2568	887	53.6	51.1	23.6	19.3	3.6	2.2
Other	437	197	79.3	75.4	48.8	37.1	13.4	9.3
Importance of religion								
Very	3406	1087	56.5	51.5	23.8	18.8*	2.5	1.4
Somewhat	1357	696	84.0	81.0	48.3	39.0*	9.7	5.4*
Not really	283	180	85.8	75.7	53.8	41.6	10.2	9.9
Not at all	112	89	81.9	77.6	54.4	47.1	15.3	9.0
Education								
< High school	2063	479	53.6	50.4	27.8	23.5	5.2	6.3
High school	1628	779	71.9	66.3	35.3	26.4*	9.2	3.8*
Some college	935	401	73.2	70.2	37.3	30.6	4.4	3.1
College graduate	583	397	84.0	75.4*	47.9	39.8	3.4	1.8

(Continued)

report slightly higher rates of alcohol use than did Blacks or Hispanics, but the differences are not significant.

Marital status is a life-style indicator that, together with age, is related to patterns of socializing and to alcohol use. The never married, as a group, are younger than the married, and past surveys have often found that they report higher rates of alcohol use. Similarly, the 1990 data show significant differences between married and never-married respondents in weekly drinking and in the proportion reporting five or more drinks on one occasion at least weekly in the past 12 months.

Measures of household income, education, and employment status are positively associated with most measures of alcohol consumption, although small n's result in nonsignificant differences in many instances. The relationship of household income and the measures of alcohol use is the clearest of these three variables; those reporting household incomes above the median were significantly higher on all six alcohol use measures.

We also contrasted respondents in nonmetropolitan areas with those in metropolitan areas of less than 50 000 population and 50 000 or more. Respondents in large and small metropolitan areas did not differ significantly from each other, but there were significant differences ($P < .05$) between the metropolitan and nonmetropolitan groups on all measures except the five drinks per occasion measure.

Finally, we compared five census divisions of the United States. The Northeast was the "wettest" of these. Compared with the South, the Northeast had significantly higher rates on all consumption measures except the five drinks per occasion measure. The Northeast region's rates were higher than those of the remaining three regions as well; however, few of these differences were statistically significant.

Trends, 1984 through 1990

Table 1 shows data from both 1984 and 1990. In 1990 compared with 1984, there was a significantly lower proportion of current drinkers and a lower proportion of current drinkers of wine, beer, and liquor. There were also significantly fewer respondents reporting that they had drunk any alcoholic beverage as often as once a week in the preceding year, and relatively fewer who reported drinking five or more drinks per occasion as often as once a week.

TABLE 2—Continued

	1984 (n = 5221)	1990 (n = 2058)	Current Drinkers, %		Weekly Drinkers, %		Drinkers of Five or More Drinks, ^a %	
			1984	1990	1984	1990	1984	1990
Urbanicity								
Metro > 50 000 population	2796	889	72.5	67.3	39.7	31.2*	7.2	4.8
Metro ≤ 50 000 population	850	555	78.6	70.0*	39.6	30.6*	7.1	2.7*
Non-metro	1574	614	63.5	56.3*	31.6	23.7*	4.9	3.7
Region^d								
Northeast	990	346	80.1	75.5	41.1	37.6	3.4	3.9
Midwest	883	612	74.9	69.3	41.4	27.1*	7.6	3.3*
Pacific	815	266	74.6	64.8	41.7	28.0*	8.5	5.0
South	2322	698	57.8	58.8	26.8	27.1	4.9	3.7
Mountain	211	136	62.1	53.7	31.5	23.2	12.2	4.2

Note. Percentages are based on weighted sample sizes (effective n's of 1228 for the 1984 survey and 1150 for the 1990 survey). Subgroup n's may not equal total because of missing data.

^aPersons who reported having five or more drinks on one occasion at least once a week during the previous year.

^bDefined as Protestant (no denomination mentioned), Lutheran, Presbyterian, Episcopalian, Unitarian/Universalist, Quaker, or Congregational.

^cDefined as Baptist, Methodist, fundamentalist Protestant, Pentecostal, Assembly of God, Church of God, Nazarene, Holiness, Apostolic, Evangelical, Sanctified, Christian Church/Disciples of Christ, United Church of Christ, Christian Reformed, Jehovah's Witness, Seventh Day Adventist, Mormon/Latter Day Saints, Brethren, Spiritualist, Rastafarian, and Salvation Army.

^dNortheast includes New England and Mid-Atlantic states; Midwest includes East North Central and West North Central states; Pacific includes only Pacific states; South includes South Atlantic, East South Central, and West South Central states; Mountain includes only Mountain states.

* $P < .05$.

Table 2 contains these same measures of alcohol consumption but shown within various categories of demographic characteristics. The same 1984 vs 1990 comparisons were made for the current use of wine, beer, and liquor considered separately (data not shown). In all, we made 336 comparisons, of which 124 were significant ($P < .05$); all these differences were in the direction of less alcohol use in 1990 than in 1984.

Table 2 contains proportions of current drinkers, weekly drinkers (of any alcoholic beverage in the past 12 months), and drinkers of 5 or more drinks on one occasion at least weekly during the past year. In almost all cases, the figures for 1990 are lower than those for 1984, although many differences fail to reach significance. Not shown here are data on current use of the three beverage types asked about in the two surveys. Generally speaking, the same patterns obtain for wine, for beer, and for liquor as obtain for any alcoholic drink. That is, there is a tendency for the 1990 figures to be lower than those for 1984, although the differences in smaller demographic categories are often too small to be statistically significant. As seen in Table 1, the

percentage who reported drinking at least five alcoholic drinks at least as often as once a week in the last year was significantly lower in 1990 than in 1984. However, the data shown in Table 2 for persons who drank five or more drinks per occasion suggest that the figures for 1990 are often not significantly lower than those for 1984, even though the direction of differences is almost uniform.

The downturn in alcohol consumption between 1984 and 1990 was fairly general, but not uniformly so. White respondents reported significantly lower alcohol use by all measures in 1990 than in 1984, but no significant differences were found for Black or Hispanic respondents on any of the measures of alcohol use.

Gender differences in alcohol use, although still substantial, were smaller in 1990 than in 1984. For men, the 1990 figures on all six measures of alcohol use were significantly lower than those for 1984; for women, significantly lower figures in 1990 compared with 1984 were found only for alcohol use at least as often as once a week and any current use of beer or liquor.

As in previous surveys, older people reported lower rates of alcohol use than

did younger people. Within age categories, the 1990 figures on alcohol use are generally lower than 1984 figures, but the differences often fail to reach statistical significance. The few significant differences between the two surveys occurred more often in the younger age categories (ages younger than 40 years).

Similarly, comparisons of marital status categories show lower rates of alcohol use in 1990 than in 1984, but few differences reach statistical significance. The never married reported more alcohol use than did members of other categories, but it was also among the never married that the rates of alcohol use on all six measures were lower in 1990 than in 1984.

As discussed in the description of the 1990 sample, conservative Protestants reported lower rates of alcohol use on almost all measures than did Jewish, Catholic, and liberal Protestant respondents. Among liberal Protestants, the 1990 rates were significantly lower than those for 1984 on all six measures of alcohol use. Catholics reported significantly lower rates of wine and liquor use in 1990 than in 1984 (data not shown). Respondents who said that religion was "very important" in their lives reported lower rates of alcohol use in 1990 than in 1984.

In general, lower rates of alcohol use were reported across all categories of education, family income, employment status, and urbanicity in 1990 than in 1984, but relatively few differences are statistically significant. One exception is in the rates for those employed full-time, for whom each measure of alcohol use was significantly lower in 1990 than in 1984.

A comparison of 1984 and 1990 data for regions indicates that rates of alcohol use were lower in 1990 than in 1984 except in the South. Of the other four census regions, only the Midwestern region was statistically significantly lower on all measures in 1990 than in 1984.

Given these shifts, is the downturn in alcohol consumption still apparent when the effects of changes in population characteristics are taken into account? To address this question, we used multivariate analyses that included simultaneous entry of all the independent variables shown in Table 2 for each alcohol measure.

The findings from the logistic regressions suggest that the apparent decline in alcohol use among US adults still holds when demographic characteristics of the

population are controlled. The data (not shown) indicate that for each of the six variables predicted, the year of the survey is a highly significant predictor, and that reduced odds of being in each predicted drinking category are associated with 1990 as compared with 1984. For instance, the odds of being a current drinker in 1990 were .696 compared with 1984. Similarly, the odds of being a weekly drinker were .617; of being a current wine drinker, .625; of being a current beer drinker, .703; and of being a liquor drinker, .613. Finally, the odds of reporting drinking five or more drinks on one occasion at least once a week were .515 in 1990 compared with 1984.

Because ethnicity has been an important factor in alcohol use in the United States, separate logistic regressions were run for White, Black, and Hispanic respondents. For Whites, year of survey was significant for all drinking measures except drinking five or more drinks on one occasion at least weekly. Year of survey was not significant for the Black or Hispanic groups for any of the alcohol use measures.

Discussion

The survey data comparing 1990 and 1984 indicate that rates of abstinence have increased in many sociodemographic categories and that some shifts in drinking patterns toward lighter drinking have also taken place. Rates of abstinence among US adults had remained more or less constant for about 50 years,⁹ and yet the proportion of respondents who reported abstaining from each beverage or from all beverages seems to have increased in the short time between 1984 and 1990.

However, these data do not suggest that dramatic changes have taken place in the correlates of alcohol use since 1984. For instance, men and younger people of both sexes still include more drinkers and heavier drinkers than do women and older people, and regional differences in consumption patterns remain. The downturn in alcohol consumption that occurred among Whites did not extend to Black and Hispanic respondents. Since consumption as measured in 1984 was higher for Whites than for Black and Hispanic respondents, the result is a lessening of the differences between groups, and in

1990 no significant differences remained. Note that in the 1984 but not the 1990 national survey, Blacks and Hispanics were oversampled to permit detailed analyses of drinking patterns and problems in these groups.^{10,11}

Will this downward trend in consumption continue? Some researchers have found reason to believe this is the case.^{5,12} Room¹² has suggested that the climate of opinion that favored alcohol consumption, and which tolerated some level of alcohol-related problems, reached a periodic high point around 1980 or so and has begun a decline. He notes that a similar downward swing occurred in the years preceding Prohibition, and that this downturn was followed by an upward trend from 1980 to 1993. He argues that it takes about three generations to forget the troubles that accompany high consumption rates, after which consumption may trend upward. And it may take about the same time for rates of alcohol use and problems to increase to the point where popular sentiment supports measures intended to reduce consumption.

Williams et al.⁵ add that the population as a whole is aging, and that age is negatively related to alcohol use. Data from the 1990 National Household Survey on Drug Abuse suggest that use of other drugs, including marijuana and cocaine, has declined at about the same time that alcohol use has declined.¹³ Given that this trend is occurring, an important issue to consider is whether these changes will affect the prevalence of alcohol-related problems, and, if so, which ones. □

Acknowledgments

This research was supported by a National Alcohol Research Center Grant (AA-05595) from the US National Institute on Alcohol Abuse and Alcoholism to the Alcohol Research Group, California Pacific Medical Center Research Institute, San Francisco, Calif.

This paper was presented at the 120th Annual Meeting of the American Public Health Association, Washington, DC, November 8–12, 1992.

The authors wish to thank Gloria Bocian for her skilled computer programming assistance.

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