

Guns and Gun Threats at College

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Abstract. A random sample of more than 10,000 undergraduate students, selected from 119 4-year colleges, answered a mailed questionnaire about gun possession and gun threats. Approximately 4.3% of the students reported that they had a working firearm at college, and 1.6% of them have been threatened with a gun while at school. Students are more likely to have a firearm at college and to be threatened with a gun while at college if they are male, live off campus, binge drink, engage in risky and aggressive behavior after drinking, and attend institutions in regions of the United States where household firearm prevalence is high. Having a firearm for protection is also strongly associated with being threatened with a gun while at college. Students who reported having firearms at college disproportionately reported that they engaged in behaviors that put themselves and others at risk for injury.

Key Words: alcohol, college, firearms, guns, injury

Twenty murders, 1,240 rapes, and 2,267 aggravated assaults were reported to have occurred on 4-year college campuses in 1998.¹ Although it is generally agreed that the extent of violence greatly exceeds these reported statistics, even these underestimates belie the impression of college campuses as idyllic sanctuaries for learning and scholarship, impervious to the problems of violence that affect surrounding communities.

Despite broad-based concern about violence on campus, little accurate information about the scope and nature of this problem is available. Little is known about violence on campus, and less is known about the role that weapons play in preventing or exacerbating such violence. Previous

research that focused on weapon carrying among college students across the US found that 11% of male students and 4% of female students reported having carried weapons (gun, knife, etc) on campus in the previous month.² Students who carried weapons were more likely than students who did not do so to report drinking heavily, driving while under the influence of alcohol, using illicit drugs, suffering adverse consequences of substance abuse, being victims and perpetrators of physical and sexual violence at college, and attending college in the South.³

How many students carried guns and in what ways gun-carrying students differed from those who carried other weapons were not reported. In a smaller study of college students in California, 6% carried weapons over a 30-day period (overall, fewer than 1% carried handguns). Correlates of weapon carrying were not examined.⁴

According to the only previous national survey of firearm possession at college, 6.4% of male students and 1.5% of female students had a working firearm at school. In addition, students with guns were more likely than students without guns to have alcohol-related problems, such as getting into fights attributed to drinking alcohol and being arrested for drinking while intoxicated.⁵ We believe our current study is the first to explore (1) predictors of nonfatal firearm victimization at college and (2) how students who have firearms at school for protection differ from those who have firearms for other reasons. In addition, we report recent data to update knowledge about how students who have firearms at school differ from those who do not.

METHOD

The current survey, conducted in 2001, comprises 120 (85%) of the original 140 colleges that participated in the original 1993 College Alcohol Survey (CAS). In the original survey, the authors worked from a random national sam-

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ple selected from the American Council on Education's list of accredited 4-year colleges by using probability proportionate to size of enrollment; the sample is described elsewhere.⁶ The 20 schools that were in the original sample but are not included in the current study were dropped primarily as a result of the institutions' inability to provide a sample of students and mailing addresses to meet the time constraints of the survey.

Administrators at each participant school provided a list of 215 randomly selected students from all full-time undergraduate students enrolled during the 2000/01 school year. Initially, we sent a questionnaire entitled College Alcohol Study to the students in early 2001. We sent at least 3 separate mailings in at least a 3-week period: first a questionnaire, then a reminder postcard, followed by a second questionnaire. We timed the mailings to avoid the periods immediately before and after spring break to ensure that student responses pertained to a time when they were at school. Responses were voluntary and anonymous. Details of the previous sampling methods are described elsewhere.⁶⁻⁸

One college's response rate was substantially lower than the others were, and it was excluded from our analyses, leaving 119 schools. The sample of 119 colleges represented a national cross-section of students enrolled at 4-year colleges. Sixty-nine percent of the respondents attended public colleges; 31% attended private colleges, which approximates the US national distribution of full-time 4-year college students (68% attending public and 32% attending private schools⁹). Forty-seven percent of the respondents attended large colleges (> 10,000 students), 23% were at medium-sized colleges (5,001–10,000 students), and 29% were enrolled in small colleges (< 5,001 students). The US national distribution is 37%, 24%, and 40%, respectively.⁹ Sixty-nine percent of the respondents attended schools in large or medium-sized cities, compared with 71% of students nationwide; 13% of the respondents attended schools with a religious affiliation, compared with 16% nationwide.⁹

The 119 colleges that participated in the 2001 survey were located in 38 states and the District of Columbia and represented a cross-section of American higher education. The sample of students was predominantly White (74%) and included more women than men (64%), a result partially attributable to the inclusion of 5 all-women's colleges. This was comparable to the most recent national data for 1999 from 4-year undergraduate institutions, where 72% of students reported being White and 53% of the students were women.¹⁰ Data were weighted to the 1999 population distribution of each school in terms of gender, age, and race, and we used weighted data in all analyses.

Students' responses to the survey were voluntary and anonymous, and students were told that they did not have to answer any question that made them feel uncomfortable. As a result, the study received exempt status from the campus institutional review committees. We offered a lottery with cash prizes to encourage responses. Names of students were

drawn from those who returned a separate postcard indicating that they had completed the survey.

We eliminated from our sample responses from 4,530 of the 25,585 students to whom questionnaires were mailed because of incorrect addresses reported by the school, or because students had withdrawn or were on leave of absence. This reduced the sample size to 21,055. Students returned 10,904 questionnaires, which yielded an overall response rate of 52%.

Response rates varied among colleges, ranging from 22% to 86%, and 16 colleges' response rates were below 40%. One school's response rate was 15% for the current survey, and its response rates had been equally low in previous years; we dropped it from our analyses. Omitting this school did not alter our results. Response rates were not significantly associated with college or student characteristics, including rates of gun ownership and gun victimization. Results that included schools with response rates of less than 40% did not differ from results that excluded these schools; regressions including the response rates as a covariate were nearly identical to those without response rates in the model. Results reported in this article include all 119 schools.

We examined the potential bias that might have been introduced by nonresponders. First, we compared responses of students who responded early with those who responded late. We found no statistically significant differences in rates between students who responded before and after the second mailing in 2001 (44% vs 43%), $\chi^2(1, N = 10,904) = 0.9223$, $p = .3369$. In addition, we sent a short form of the questionnaire to a sample of students who did not return the original questionnaire; more than 500 students responded.

The 2 key questions for this study were (1) "Do you have a 'working firearm' (defined as a gun, including pistol, revolver, rifle, or shotgun) with you at college?" and (2) "While you have been at college, has anyone used, displayed or brought out a working firearm against you in a hostile manner?" Students who reported having a firearm at school were asked to indicate the reason(s) they had the gun: (1) protection, (2) hunting, (3) recreation, (4) ROTC, or (5) another reason. We constructed the following 3 mutually exclusive categories of gun possession at college: students who did not have guns at college; students who kept guns at college for protection; and students who kept guns at college, but not for protection. We classified those students who reported that they kept guns for protection as owning for protection, even if they also indicated that they owned for other reasons. Only 4 respondents reported owning a gun because of their ROTC status. The survey also asked for detailed information about drinking behavior, about the extent to which students experienced specific problems as a consequence of drinking, and about other behavioral and health-related issues.

Published survey-based estimates from the General Social Surveys (GSS) provided regional handgun ownership rates for our analyses.¹¹ The GSS has been conducted by the National Opinion Research Center for most years

between 1972 and 1993 and biennially since 1994. In its current form, the GSS is conducted in person with a national area-probability sample of 3,000 noninstitutionalized adults. The sample is chosen to be representative of each of the 9 US Census regions and of the nation as a whole, but not of individual states. Regional gun ownership rates have been relatively stable throughout the 1990s. The levels we present here are the average of those from 1993 to 1998, the most recent years available.

To make our measures of firearm ownership easier to compare with one another, we standardized all measures to have a mean of 0 and a standard deviation of 1. Because the standard deviation of each firearm ownership measure is equal to 1, the reported odds ratios (ORs) correspond to each standard deviation of change in firearm ownership levels.

We used bivariate and logistic regression analyses to examine the association between demographic and behavioral characteristics and (1) gun ownership and (2) gun victimization at college. We used driving an automobile after having 5 or more alcoholic drinks as the alcohol-related problem behavior in the multivariate analyses we present. Results were similar when, instead of binge drinking and driving, we used other (collinear) alcohol-related problematic behaviors in multivariate models (ie, drinking, then having sex without protection; vandalizing property; or getting into trouble with the police).

We received responses from 10,771 students on both gun questions. Of these, 10,288 students had complete data on all of the variables. We excluded from our analysis any responses that did not answer any of the questions. Students within a given college are more alike than students chosen randomly and, consequently, responses from students within a given college are not independent. We account for this nonindependence by clustering observations by college. We corrected all standard errors by clustering observations by college.

RESULTS

Nationwide, 4.3% of college students had a working firearm at college. Of these, approximately half (47%) responded that 1 reason they had a gun was for protection (Table 1). Compared with students who did not have a firearm at college, those who had a firearm were more likely to be male (85% vs 43%); to be White (91% vs 72%); to live off campus (86% vs 57%); to live with a significant other (16% vs 8%); to drive a motor vehicle after binge drinking (27% vs 9%); to have unprotected sex when under the influence of alcohol (17% vs 10%); to vandalize property (21% vs 10%); and to get into trouble with the police (10% vs 6%). Describing the same data in a different way, 8.2% of men had a firearm, compared with 1.1% of women; 5.3% of Whites had a gun, compared with 1.6% of African Americans; and 12% of those who reported binge drinking and driving had a gun, compared with 2.7% of the students who did not binge drink (Table 2).

Students with guns at school were also significantly more likely to live in regions of the United States where handguns

are more prevalent and to report having been threatened with a gun while at college (5.9% of gun owners reported having been threatened with a gun vs 1.4% of nonowners), especially if they kept their gun at school for protection (8.4% of whom reported being threatened with a firearm while at college—Table 3).

Compared with students who owned guns for reasons other than protection, those who owned guns for protection were similar in age (22 years vs 22 years), and use of cigarettes, marijuana, and cocaine (Table 1), but were more likely to be women (20% vs 9%), to be African American (5% vs 1%), to attend college in urban areas (74% vs 64%), to live off campus (90% vs 83%), to have used crack (1.8% vs 0.5%), and to have a grade point average of less than B+ (52% vs 44%). Among gun owners, those who owned the weapon for protection were somewhat less likely to binge (55% vs 68%), but almost equally likely to binge and drive (28% vs 26%). Multivariate analyses generally bore out bivariate associations (Tables 1 and 2).

The geographic distribution of firearms among students at college was highly correlated with the regional rate of household handgun ownership among the general population ($r = .9$, Table 4). One third of the students attended colleges in the 3 regions of the US Census where guns are least prevalent, but only 10% of students with guns at college attended school in those regions (Table 1). In multivariate regressions, the likelihood that a student kept a firearm at college was significantly associated with the rate of household handgun prevalence, adjusted OR = 1.5, 95% confidence interval (CI) = 1.3, 1.8, for each standard deviation increase in the rate of household handgun ownership (Table 2). Handgun ownership levels in the general population varied across regions, with a standard deviation of 7%; an OR of 1.5 means that, compared with students who attend school in New England (household handgun ownership rate = 15%), students who attend schools in the West North Central or the Pacific regions (household ownership rates of 21–22%) were 50% more likely to keep a gun at college. Similarly, because 38% of households in the East South Atlantic region had handguns, compared with students in New England, students in the East South Atlantic states were 3.4 times more likely to have a gun at college (ie, 1.5 compounded across 3 standard deviations).

Regional gun ownership rates were also significantly associated with the likelihood that a student was threatened with a gun while at college, $r = .5$ (Table 4). Two thirds of the surveyed students lived in regions of the United States with household handgun ownership rates of more than 20%, whereas 76% of all firearm threats occurred in these regions (Table 1). In multivariate analyses (Table 3), even after controlling for whether an individual student kept a firearm at school, students were significantly more likely to report being a victim of a firearm threat if they attended college in a region of the United States where firearm ownership rates were high, OR = 1.3, 95% CI = 1.1, 1.6. Thus, compared with students attending college in New England, students in the East South Atlantic states were 2.2 times more likely to

TABLE 1
Student Characteristics, by Firearm Possession and
Firearm Victimization at College, in Percentages

Characteristic	Total sample (age = 21 y)	Have firearm (4.3%) (age = 22 y)	Victim of firearm threat (1.6%) (age = 21 y)
Gender			
Male	43	85	70
Race			
White	72	91	62
African American	8	3	17
Asian	9	2	10
Other	10	4	11
School location			
Rural	26	32	22
Urban			
Housing			
Off campus	57	86	71
Fraternity or sorority member	13	16	19
Lives with			
Roommate	60	54	61
Parent/relative	20	19	17
Significant other	8	16	9
Alone	13	14	15
Alcohol and driving			
Binge and drive	9	27	31
Binge but not drive	34	36	36
Nonbinge drinker	35	23	22
Nondrinker	20	12	10
Alcohol-related problems			
Unprotected sex	10	17	26
Vandalize property	10	21	23
Trouble with police	6	10	21
Drugs			
Cocaine last m	1.5	3	5
Crack last m	0.3	1.1	4
Marijuana last m	17	21	34
Cigarettes last m	25	36	35
GPA $\geq$ B+	57	52	48
Victim of firearm threat	1.4	5.9	
Own firearm at college			
For any reason	4.3		16
For protection	2.0		11
Not for protection	2.3		5
Attend college in the 3 US Census regions† with lowest rates of household handgun ownership	34	10	24
College and senior year high school in same state	73	81	77

Notes. The profile of all students in our survey was nearly identical to the profile of the 95.7% of students who did not have a gun at college and the 98.4% of students not threatened with a gun at college. A binge is defined as having ≥ 5 drinks in a row on a single occasion (men) or ≥ 4 drinks in a row on a single occasion (women); a nonbinge drinker is a student who drank alcohol in the past year but did not binge in the 2 weeks prior to the survey; a nondrinker is a student who did not drink any alcohol in the year before the survey. Binge and drive is a category of those students who both binged at least once over 2 weeks before the survey and drove a vehicle shortly thereafter. GPA = grade point average.

†The 3 US Census regions with the lowest household handgun ownership rates are New England, Mid-Atlantic, and East North Central regions, comprising Maine, Rhode Island, New Hampshire, Vermont, Massachusetts, Connecticut, Pennsylvania, New York, New Jersey, Illinois, Ohio, Indiana, Michigan, and Wisconsin.

TABLE 2
Characteristics of College Students Who Have a Working Firearm at College

Variable	Own gun		Adjusted OR why own	
	%	Adjusted OR	Protection	Not protection
Overall	4.3			
Protection	2.0			
Not protection	2.3			
Age				
≥ 21 y	6.6***			
< 21 y	2.2	1.7**	1.1	2.3***
Gender				
Male	8.2***	8.3***	5.0***	13.5***
Female	1.1			
Race				
White	5.3	(Reference)		
African American	1.6**	0.3**	0.5	0.1**
Asian†	0.9***	0.2**	0.3	0.1***
Other	1.8***	0.3***	0.3***	0.2**
School location				
Rural	5.2	1.4	1.0	1.9**
Urban	4.0			
Housing				
Off campus	6.4***	4.2***	5.6***	3.0***
On campus	1.4			
Fraternity or sorority member				
Yes	5.2	1.3	1.3	1.3
No	4.1			
Live with				
Roommate	3.8	(Reference)		
Parent/relative	4.1	1.1	1.1	1.2
Significant other	7.8***	1.9**	2.4**	1.3
Alone	4.5*	1.5	1.7*	1.3
Alcohol				
Binge and drive	12.0***	2.3***	2.2*	2.1*
Binge, do not drive	4.4*	1.6**	1.2	1.9*
Nonbinge drinker	2.8	0.9	1.1	0.6
Nondrinker	2.6	(Reference)		
Drug use last 30 d				
Cocaine				
Yes	9.0**	0.9	0.9	0.9
No	4.2			
Crack				
Yes	13.7*	2.9	4.1	1.2
No	4.3			
Marijuana				
Yes	5.4*	0.9	0.8	1.0
No	4.1			
Cigarettes				
Yes	6.1***	1.3	1.6	1.0
No	3.7			
GPA ≥ B+				
Yes	3.9*	0.8	0.7*	1.1
No	4.8			
Victim of firearm threat				
Yes	15.6***	2.3***	3.2*	1.3
No	4.1			
Victim of firearm threat				
Yes	15.6***	2.3***	3.2*	1.3
No	4.1			
Regional rate of household handgun ownership (%)	1.5***	1.7***	1.4***	
M = 22%, SD = 7%; Low = 10%, High = 38%				

Notes. The OR associated with regional handgun ownership rates expresses the ratio of the odds that a student has a firearm at college if he or she attends school in a region of the US with an average household ownership rate 7% higher (1 SD higher) than a student living in another region of the country.

†Asian = Asian and Pacific Islanders.

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

TABLE 3
Characteristics of Students Who Were
Victims of Hostile Gun Display at College

Variable	Students threatened/ otherwise victimized by gun at college (%)	Multivariate adjusted logistic regression OR (95% CI)
Overall	1.6	
Protection		
Not protection		
Age		
≥ 21 y	2.2**	1.4
< 21 y	1.1	
Gender		
Male	2.6**	2.3***
Female	0.9	
Race		
White	1.4	(Reference)
African American	3.8**	4.2***
Asian†	1.7	2.1
Other	1.9	1.6
School location		
Rural	1.4	0.9
Urban	1.7	
Housing		
Off campus	2.0**	1.5
On campus	1.1	
Fraternity or sorority member		
Yes	2.5*	1.4
No	1.5	
Live with		
Roommate	1.7	(Reference)
Parent/relative	1.4	1.0
Significant other	1.7	1.0
Alone	2.0	1.2
Alcohol		
Binge and drive	5.2**	4.1**
Binge, do not drive	1.7*	2.1
Nonbinge drinker	1.0	1.2
Nondrinker	0.9	(Reference)
Drug use last 30 d		
Cocaine		
Yes	5.3**	0.9
No	1.6	
Crack		
Yes	17.7***	6.4***
No	1.6	
Marijuana		
Yes	3.3***	1.9*
No	1.3	
Cigarettes		
Yes	2.3*	0.9
No	1.4	

table continues

TABLE 3—Continued

Variable	Students threatened/ otherwise victimized by gun at college (%)	Multivariate adjusted logistic regression OR (95% CI)
GPA ≥ B+		
Yes	1.4	1.0
No	1.9	
Regional household handgun ownership rate		1.3*
M = 22%		
SD = 7%		
Low = 10%		
Hi = 38%		
Personally own a firearm at college		
For protection	8.4***	2.8*
Not for protection	3.7*	1.3
No (Reference)	1.4	(Reference)

Notes. CI = confidence interval; Asian = Asian and Pacific Islander.

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

have been threatened with a gun while at college (ie, 1.3 compounded across 3 standard deviations in gun ownership = 2.2).

In the multivariate analyses (Table 3), various additional characteristics were associated with being threatened with a gun while a student at college. Students were also more likely to be threatened with a gun if they were male, lived off campus, drove a motor vehicle when under the influence of alcohol, had unprotected sex, vandalized property, and got into trouble with the police. Students who were threatened with guns while at college, unlike students who kept guns at college, were disproportionately students of color, particularly African Americans, OR = 4.2, 95% CI = 2.2, 8.1.

Of the 119 colleges in our survey, at least 1 respondent from 77% of the schools said that he or she had a gun at college; 71% of the schools had at least 1 student who reported being threatened with a gun while at college. Eliminating the 5 schools with the highest gun ownership rates did not alter our results.

COMMENT

The present study is the first to explore predictors of non-fatal firearm victimization at college. To our knowledge, this is also the first study to examine the relationship between rates of firearm ownership among the general population and firearm ownership among college students. Overall, we found that students who have firearms at college and students who have been threatened with firearms while at col-

TABLE 4
Rates of Hostile Gun Display and Gun Ownership
Among College Students, by US Census

Geographic area†	Hostile gun displays/ 1,000 students	Students with firearm at college for protection/ 1,000 students	Household handgun ownership rate US population (%)
New England	9	3	15
West North Central	9	22	21
Mid-Atlantic	13	4	10
Mountain	14	16	27
East North Central	14	10	18
East South Atlantic	16	48	38
Pacific	17	17	22
West South Atlantic	26	45	30
South Atlantic	29	28	27

Notes. At the level of the 9 US Census regions, household handgun ownership rates in the general population are correlated with rates of gun possession by students and with gun assaults of students at college, $r_s = .9$ and $.5$, respectively.

†New England: Maine, Rhode Island, New Hampshire, Vermont, Massachusetts, Connecticut; Mid-Atlantic: Pennsylvania, New York, New Jersey; East North Central: Illinois, Ohio, Indiana, Michigan, Wisconsin; West North Central: North Dakota, Nebraska, South Dakota, Iowa, Missouri, Minnesota, Kansas; South Atlantic: Maryland, Georgia, North Carolina, Virginia, West Virginia, Delaware, Florida, South Carolina; East South Atlantic: Alabama, Tennessee, Mississippi, Kentucky; West South Atlantic: Arkansas, Texas, Oklahoma, Louisiana; Mountain: Wyoming, Arizona, New Mexico, Utah, Colorado, Idaho, Nevada, Montana; Pacific: Washington, California, Oregon, Hawaii, Alaska.

lege tend to drink to excess, engage in aggressive and dangerous behavior after drinking, and attend college in regions of the United States where firearm ownership is high.

Consistent with findings from the 1997 College Alcohol Study,⁵ we found that approximately 4% of college students have a gun at school. Adults in the general population are far more likely to own firearms in general (24%) and handguns in particular (15%), the latter usually for protection.^{12–15} Nevertheless, the geographic and demographic distribution of firearms at college reflects the distribution of guns across the United States, consistent with the observation that more than 70% of the students in our survey attended college in states where they attended high school. Students with guns at college are concentrated in US regions where household firearm ownership levels are higher, such as the South and the Mountain states, and like gun owners generally, they are disproportionately male and White.^{13–16}

As in the 1997 CAS,⁵ we again found that gun-owning college students are more likely than their unarmed counterparts to drink frequently and excessively and, when inebriated, to engage in activities that put themselves and others at risk for life-threatening injury, such as driving when under the influence of alcohol, vandalizing property, and having unprotected intercourse. In this respect, college students who owned guns resemble college students who carry weapons generally,² as well as their younger counterparts; high school students who carry weapons, including guns, are more likely than nonweapon-carrying students to consume

excessive amounts of alcohol, to fight, and to have multiple sexual partners.^{17–25} Given that alcohol is widely thought to contribute to violent behavior generally^{26–29} and to a majority of college student suicides, rapes, and other violent crimes,³⁰ we find it quite troubling that almost two thirds of students with guns at college report binge drinking.

Among students who have a gun at college, those who own guns for protection resemble students who own for other reasons in several, but not all, respects. These 2 groups of gun-owning students are similar in age and alcohol-related risky behavior, but those who own for protection are more likely to be women, to be African American, to live off campus, to attend colleges in urban areas, and to use crack. The tendency for women and African American students with guns at college to have guns for protection reflects a similar tendency among women and African American gun owners in the general population.¹⁶

Fewer than 2% of students reported being threatened with a gun while at college. Predictors of being threatened with a gun while at college include personally having a gun for protection, as well as characteristics associated with keeping a gun at college, such as male sex, driving while under the influence of alcohol, and attending college in US regions where the prevalence of handgun ownership is high.

Our finding that students who have guns for protection are more likely than other students to have been threatened with a gun while at college is consistent with previous work suggesting that high school students who carry guns to

school generally carry them for protection and are at high risk for repeated victimization, including physical and sexual attacks.^{17,22}

The cross-sectional association we report between rates of firearm victimization among college students and rates of household firearm ownership in the general population has not previously been examined, but is consistent with several ecological studies reporting an association between household firearm ownership rates and fatal firearm violence across the United States.^{31–38} The relationship between area-level firearm ownership and college firearm victimization is robust, remaining significant even after controlling for several potential confounders, including individual firearm ownership by students and whether a college was located in an urban or rural setting. This finding suggests that students who attend college in communities where firearms are readily available have an elevated baseline risk of firearm victimization, a risk that may be further increased if the student personally has a gun at school.

In contradistinction to the large, positive correlation of White race with gun ownership at college, victims of firearm threats are disproportionately students of color, particularly African Americans, a finding that reflects both the firearm ownership and firearm victimization profiles for the country as a whole.^{14,39}

Policies aimed at reducing firearm victimization at college need to consider both the relative risk and the proportion of all hostile gun displays associated with a particular characteristic. For example, even though the relative risk associated with crack use is very high (OR = 6.4), interventions aimed exclusively at students who use crack cocaine would miss the vast majority of students who are victimized by guns. If institutional policy reflects the overwhelming preference among Americans to prohibit having¹² or carrying⁴⁰ guns on campus, efforts to enforce or encourage compliance with firearm prescriptions will have a greater net effect if they are aimed at individuals who engage in behaviors that are prevalent among gun owners (eg, binge drinking).

This study has several limitations. First, it is a cross-sectional analysis and can only describe associations; it cannot show causation. Second, data come from a survey, and sample surveys are subject to sampling error; in a sample of 10,000, the results are subject to an error margin of $\pm 1\%$ for each question resulting from chance variation in the model. Third, although students at each school were randomly sampled, schools and students participating in the survey are a nonrandom subset of the original random sample. However, we have no reason to expect that nonparticipation in the CAS should be systematically related to either student gun ownership or gun victimization. Fourth, self-report data may be subject to inaccuracies because of social desirability responses, recall bias, intentional distortions, or non-candid responses.⁴¹ For example, although registered gun owners provide generally valid responses to questions about gun ownership,⁴² individuals who own guns illegally may be reluctant to admit ownership. With respect to drinking

and substance abuse, important independent variables in our study, research has tended to support the validity of self-report data.^{43,44} Fifth, our study contains no data on the circumstances or perpetrators of the gun threats, on whether guns at college cause or prevent problems, or on the percentage of students whose gun possession violates either the law or campus policy.

Despite these limitations, the current study is the first to report an association between rates of regional firearm ownership in the general population and rates of firearm ownership by students at college. The current study is also the first nationally representative survey to examine multivariate predictors of being threatened with a gun at college and, consequently, to show that students who are threatened with guns while at college disproportionately attend college in regions of the United States where firearm prevalence is high, tend to be men, live off campus, have guns at college for protection, and drink to excess. In addition, the present study corroborates findings first described in the 1997 CAS, in which, as we found in the current survey, students with guns were more likely than their unarmed counterparts to be men, live off campus, binge drink, and engage in risky and aggressive behaviors after drinking.

Our data do not show whether guns at college confer a net benefit, impose a net cost, or have an indifferent effect on college communities or on individual gun owners. Future studies can add a great deal to our understanding of the tradeoffs involved in the decision to keep a firearm at college by gathering descriptive, contextual information about how firearms are used by college students, especially with respect to the relative frequency and nature of offensive and defensive gun use. Additional research is also needed to explore whether and if so, under what conditions, gun possession itself emboldens students to put themselves at risk for victimization, is a response to past victimization, is a response to accurate or systematically flawed perceptions of risk, or reflects an attitude toward risk that predisposes to both gun possession and risk-seeking behavior. Despite how little we know about gun use at college, our study nevertheless suggests that where guns are more prevalent in the community, they are more prevalent among students. Furthermore, our findings also suggest that students who report having guns at college disproportionately engage in behaviors that put themselves and others at risk for injury.

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NOTE

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