

A turn of the wheel: Women's experiences with drinking and driving

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Abstract

Several studies have reported that drinking and driving has declined in recent years. The effect, however, may be primarily in male drivers (Popkin, 1991, 1993). Although men who die in motor vehicle crashes are almost twice as likely as women to be legally intoxicated, women are apparently drinking and driving more often, and their involvement in alcohol-related fatal crashes is increasing (CDC, 1992).

Four recent random-digit dial telephone surveys were used to examine self-reported drinking-and-driving experiences (DDEs) among women aged 16 to 20. Questions posed measured alcohol consumption, knowledge, risk perception, drinking environment, and their relationship to DDEs. Although all four surveys were California samples, they varied on age and geographic restrictions. Similar results, however, were obtained from all four.

Introduction

Alcohol Use Among Women

In recent decades, we have seen changes in the status of women in society. This change has brought with it a shift in attitude toward women and alcohol, making drinking more socially acceptable, and to some extent expected. As women become integrated into traditional male roles, many have developed problems similar to their male counterparts.

Drinking has traditionally been considered a male issue. Most research has focused attention on men because they drink more and experience more alcohol-related problems than women. However, the number of women who drink and the amounts they drink are increasing, and they are by no means insignificant. From 1961 to 1965 and 1986 to 1990, females generally initiated alcohol use at later ages than males. However, from 1991 to 1995, the gender difference in age-specific rates of alcohol initiation became negligible (SAMHSA, 1997).

Drinking and Driving

Several studies report that drinking and driving has declined in the United States over the past years (Stewart & Voas, 1994). The effect, however, may be found primarily in males. According to Massie & Campbell (1993), among nighttime fatal crashes, 49% of men drivers and 38% of women drivers in single-vehicle crashes were under the influence of alcohol.

In a roadside survey examining drinking-and-driving differences among males and females in Minnesota, Foss and colleagues (1991) found that the drinking-and-driving behavior of females appeared to be approaching that of males. However, substantial differences remained in expressed support for law enforcement efforts to reduce DUI as well as in recognizing it as a problem.

Johnson et al. (1998) examined the effects of drinking patterns on drinking-and-driving within gender and other demographic categories using telephone survey data. They found that when controlling for drinking patterns (i.e., drinking frequency, drinks per occasion, and variance in drinking quantities) gender differences in driving after drinking were significant, but gender differences in driving while intoxicated was nonsignificant.

In a 1996 national roadside survey of weekend nighttime drivers, Voas et al. (1998) found that the number of female weekend drivers had increased significantly since 1973. Further, the proportion of female drivers who had been drinking had increased in the last decade. When the BACs of drivers in the under-age-21 group were analyzed by gender, females were found to be as likely to be drinking as males.

Materials and methods

The purpose of the current study is to examine the drinking and driving of young women (aged 16 to 20) using similar items from four California random-digit dial surveys. Areas of particular interest in these data sets include alcohol consumption, risk perception, knowledge of DUI/DWI laws, drinking environment, and their relationship to DDEs.

General Population Phone Survey of the Community Trials Project – Adult

The original data set for the General Population Phone Survey (CT-Adult) contains data collected from random-digit dialing surveys conducted for the Community Trials Program to Prevent Alcohol-Involved Trauma. Approximately 120 households in four California communities were contacted each month between April 1992 and December 1996. Almost 41,000 cases (aged 18 and older) are included with more than 390 variables. For a description of the sample process, administration, and more detailed information on the items contained in the survey, see Holder et al. (1997). For the purpose of this study, only youths (aged 18 to 20) are included (N= 1852, females = 997).

The Youth Telephone Survey of the Community Trials Project – Youth

The Youth Telephone Survey (CT-Youth) was conducted in four California communities between January 1994 and December 1996. The data set contains more than 150 variables and 1600 cases (aged 14 to 16). The sample for the survey was accumulated by extracting relevant case information from the completed General Population Telephone surveys (households with high school-aged youth). See Grube's (1997) paper for a complete description of the sample selection process, administration, and complete list of items included in the survey. For the purpose of this study, only young drivers (aged 16 to 18) were included (N= 816, females = 389) in the analysis.

Young Adult Zero Tolerance Telephone Survey

The Young Adult Zero Tolerance Telephone (ZT) Survey was conducted in response to California's passage of SB689, the zero tolerance of alcohol law for drivers under the age of 21. This survey was conducted from November 1994 through September 1996 and is a supplement to the Adult General Population Telephone Survey of the Community Trials project. Only

California residents aged 18 to 20 were surveyed (N = 457, females = 232). For a complete description of the sample selection process, administration, and item contained in the survey see Grube and Voas (1996). All cases were included in the current study analysis.

Cross-Border Binge Drinking Telephone Survey

The Cross-Border Binge Drinking Telephone Survey (Border) is a random-digit dial survey with a stratified sample (aged 18 to 30). This survey is a supplement to the on-site surveys conducted at the San Diego, California/Tijuana, Mexico border assessing cross-border binge drinking (Lange, Lauer & Voas, 1999). Questions related to the drinking experiences in San Diego and Tijuana, the drinking history, and the DDE are included in the telephone survey. Beginning in June 1998, 1400 California residents completed the telephone survey. Although the survey is still underway, this paper analyzes only respondents aged 18 to 20 (N = 694, females = 349) through July 1999.

Results

As stated, items of particular interest to this paper include those related to alcohol consumption, risk perception, knowledge of DUI/DWI laws, drinking environment, and their relationship to DDEs. Figure 1 illustrates the proposed relationship between these variables.

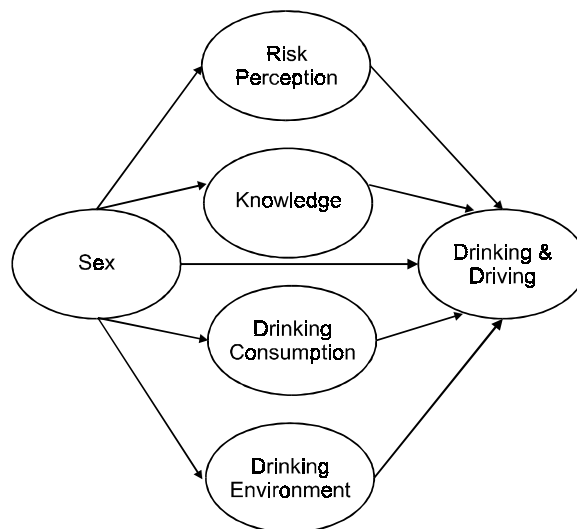


Figure 1: The Relationships Between Sex and Drinking and Driving

Alcohol Consumption

Not surprisingly, chi-square analysis revealed a significant difference between males and females, drinkers and nondrinkers, in all the data sets except the CT-Youth with respect to alcohol consumption (CT-A: $X^2(1,1845)=28.91, p=.000$; ZT: $X^2(1,456)=23.06, p=.000$; Border: $X^2(1,689)=21.30, p=.000$). Similar to what current research indicates, males were found to drink more often than females. Further, analyses of variance indicate that in all four of the data sets concerning drinking quantity (number of drinks on any 1 day in the past 4 weeks), males again drank significantly more than females (ZT: $p<.001$; CT-A: $p<.001$; CT-Y: $p<.05$; Border: $p<.01$).

Again, not surprisingly, analysis of frequency of alcohol consumption and DDEs indicates more frequent drinkers as having more DDEs within all the data sets (ZT: $X^2(6,309)=68.32, p=.000$;

CT-A: $X^2(6,257)=36.53, p=.000$; CT-Y: $X^2(6,440)=81.52, p=.000$; Border: $X^2(6,582)=142.48, p=.000$.

Drinking and Driving Experiences

A direct relationship was examined between sex and DDEs. As Table 1 indicates, chi-square analysis revealed mixed results. Significant differences were found in the ZT data set when respondents were asked if they had driven within an hour of drinking ($X^2(1,403)=11.12, p=.001$). Further, significant differences were only found in the CT-Youth survey when respondents were asked if they had driven within an hour of having three or more drinks ($X^2(1,84)=5.05, p=.025$), and significant difference was found in the CT-Adult data set when asked if they had driven within an hour of having five or more drinks ($X^2(1,56)=8.74, p=.003$). Finally, the Border data set found significant differences when respondents were asked to indicate whether they had ever driven when they felt they had drunk too much ($X^2(1,585)=18.05, p=.000$).

Table 1: Sex and Drinking-and-Driving Experience
[Is the first line a percentage in this table??]

Questions	CT Adult		CT Youth		ZT		Border	
	Yes	No	Yes	No	Yes	No	Yes	No
<i>Have driven within an hour of drinking in the last 12 months</i>								
Male	59 1.4	116 -1.4	51 1.0	322 -1.0	66 3.3	133 -3.3	X	X
Female	44 -1.4	120 1.4	32 -1.0	257 1.0	38 -3.3	166 3.3	X	X
<i>Have driven within an hour of having three or more drinks in the last 12 months</i>								
Male	35 1.1	25 -1.1	31 2.2	21 -2.2	38 1.2	29 -1.2	X	X
Female	20 -1.1	26 1.1	11 -2.2	21 2.2	17 -1.2	21 1.2	X	X
<i>Have driven within an hour of having five or more drinks in the last 12 months</i>								
Male	22 3.0	14 -3.0	17 -.4	13 .4	26 .6	13 -.6	X	X
Female	4 -3.0	16 3.0	7 .4	4 -.4	10 -.6	7 .6	X	X
<i>Have driven when probably had too much to drive safely in the past 6 months</i>								
Male	X	X	X	X	X	X	85 4.2	217 -4.2
Female	X	X	X	X	X	X	39 -4.2	244 4.2

Risk Perception

”How likely do you think it is that you would lose your driver’s license if you were stopped by the police while driving after having one whole drink?” was rated on a scale of 1 to 4 (1= *very likely*, 4 = *very unlikely*). No significant differences were found between males and females in the CT-Youth data set (most responded *very likely*). In the CT-Adult data set, however, women were underrepresented in the *very likely* category and over represented in the *likely* category

($X^2(3,359)=5.76, p=.124$). Interestingly, unlike the CT-Adult and Youth data sets, results of the ZT data set revealed that women were significantly overrepresented in the *very unlikely* category, suggesting less risk perception on behalf of the females in this sample ($X^2(3,456)=4.57, p=.207$).

With respect to risk perception and DDE ("If you personally were to drive with a BAC of .08 or higher, how likely do you think it is that you would be stopped?"), among respondents in the Border data set, significant differences were found in all the categories ($X^2(3,683)=13.69, p=.003$). Those who reported having DDEs were significantly underrepresented in the *very likely* and *somewhat likely* categories and overrepresented in the *somewhat unlikely* and *very unlikely* categories.

Knowledge

No significant differences were found between males and females concerning their knowledge of the BAC level for persons under age 21. Almost 60.0% of the respondents correctly identified .00 or .01 in the CT-Adult, almost 55.0% in the CT-Youth, 58.8% in the ZT sample, and 65.9% in the Border sample. More interestingly, in the Border data set, when respondents were asked to identify how many drinks in one hour it would take to reach a BAC of .08, no significant differences were found between males and females. The mean number of drinks was calculated at 3.06. According to the National Highway Traffic Safety Administration, it takes approximately 2 drinks in one hour for a 120-pound woman and 3.5 drinks for a 160 pound man to reach a BAC of .08 (NHTSA, 1998).

The relationship between knowledge and drinking and driving was found to be significant in the Border data set ($X^2(2,583)=6.82, p=.033$). Yet, ironically, those who reported having had DDEs were significantly overrepresented with the correct answer. No significant differences were found in the other three data sets.

Environment

According to the CT-Adult data set and the Border data set, no significant differences were found between males and females about where drinking took place. However, significant differences were found in who respondents were with in the CT-Adult sample ($X^2(6,115)=12.25, p=.057$). Females were significantly overrepresented with *spouses or significant others* and *boyfriends or girlfriends*, and underrepresented with *other friends*.

Discussion

These results only begin to tap into the myriad of analyses that can be performed with these data sets. Here, we have begun to examine a few of the factors related to sex and DDEs including consumption, knowledge, risk perception, and environment. What seems clear, however, is that although males do drink more, and more often, females still report drinking and driving almost as often as their male counterparts. When asked if they had driven within an hour of having three or more drinks, the two data sets with participants aged 18 to 20 (CT-A and ZT) revealed no significant differences between the sexes. Further, when asked how many drinks in an hour they could have and still drive safely, there was no significant difference between males and females. Because research indicates that it takes fewer drinks for women to become intoxicated than men, these analyses suggest that women maybe overestimating the number of drinks they can have and still drive safely.

It is important to consider that the analysis of these data sets only included participants aged 16 to 20. All are underaged drinkers. Further analysis with participants who are aged 21 and older may yield different results. Recent research suggests that women aged 21 to 24 are increasing their involvement drinking and driving (Popkin, 1993).

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References

- Center for Disease Control-CDC (1992). Trends in alcohol-related traffic fatalities by sex – United States, 1982-1990. *Mortality and Morbidity Weekly Report*, 41, 195-197.
- Foss, D.R., Voas, R.B., Beirness, D.J., & Sprattler, K.M. (1991). Drinking and driving among females in Minnesota. *Association for the Advancement of Automotive Medicine, 35th Annual Proceedings*. Toronto, Canada.
- Grube, J.W. & Voas, R.B. (1996). Predicting underage drinking and driving behaviors. *Addiction*, 91, 1843-1857.
- Grube, J.W. (1997). Monitoring youth behavior in response to structural changes: Alternative approaches for measuring adolescent drinking. *Evaluation Review*, 21, 231-245.
- Holder, H.D., Saltz, F.S., Grube, J.W., Voas, R.B., Gruenewald, P.J., & Treno, A.J. (1997). A community prevention trial to reduce alcohol-involved accidental injury and death: overview. *Addiction*, 92, S155-S171.
- Johnson, F.W., Gruenewald, P.J., & Treno, A. (1998). Age-related differences in risks of drinking and driving in gender and ethnic groups. *Alcohol Clin.Exp. Res.*, 22,9, 2013-2022.
- Lange, J.E., Lauer, E., & Voas, B.E.(1999). A survey of the San Diego/Tijuana cross-border bingeing: Methods and analysis. *Evaluation Review*, 23,4, 378-398.
- Massie, D.L. & Campbell, K.L. (1993). *Analysis of accident rates by age, gender and time of day based on the 1990 nationwide transportation survey*. UMTRI 93-7. Ann Arbor, MI: University of Michigan Transportation Research Institute.
- National Highway Traffic Administration-NHTSA (1998). *Presidential initiative for making .08 BAC the national legal limit* (DOT-HS-808-756).
- Popkin, C.L. (1991). Drinking and driving by young females. *Accident Analysis and Prevention*, 23, 1, 37-44.
- Popkin, C.L. (1993). A consideration of factors influencing drinking and driving by women. *Alcohol, Drugs, and Driving*, 9,3-4,197-209.
- Substance Abuse and Mental Health Services Administration-SAMHSA (1997). *Substance use among young women increasing*. National Conference on Women, September 24, 1997, Phoenix, AZ.

Stewart, K. & Voas, R.B. (1994). Decline in drinking and driving crashes, fatalities, and injuries in the United States, *Transportation Research Circular (The nature and reasons for the worldwide decline in drinking and driving)* (422, (April), 50-59.

Voas, R.B., Wells, J., Lestina, D., Williams, A., & Greene, M. (1998). Drinking and driving in the United States: The 1996 National Roadside Survey. *Accident Analysis and Prevention*, 30, 2, 267-275.