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Alcohol Use and Problem Drinking Among Women Firefighters

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Abstract

Objectives—Given high levels of occupational stress and toxic exposures, firefighters have a relatively high prevalence of occupationally-related medical and mental health disorders compared to the general public. Previous research found high rates of heavy and binge drinking among male firefighters. This study is the first to examine alcohol use among women firefighters.

Methods—Data were collected as part of a national online survey of women, career firefighters.

Results—A total of 1,913 women firefighters completed questions regarding alcohol use. Nearly 40% reported binge drinking in the previous month and 4.3% reported driving while intoxicated. Among those who drank, 16.5% screened positive for problem drinking. Problem drinkers were more than 2.5 times as likely to have been diagnosed with depression or have symptoms of post-traumatic stress disorder (PTSD), and were approximately 40% more likely to have been injured on the job in the previous year, when compared to other women firefighters. Those who screened positive for problem drinking also were significantly less likely to say that they would recommend a fire service career to other women.

Conclusions—As with male firefighters, heavy and problem drinking are prevalent among women firefighters and are associated with negative occupational outcomes.

Firefighters play a crucial role in providing emergency medical, rescue, and fire suppression services and they provide the primary public health safety net for most communities in the United States (US). There are over 1.1 million firefighters in the US who work in an estimated 30,052 fire departments (Haynes & Stein, 2014). Because they are the first to respond to emergencies of all types, serving as a firefighter is a mentally and physically demanding profession. For example, personnel are exposed to a wide range of occupational hazards including heat stress, dehydration, smoke-borne toxins, medical hazards, dangerous environments, and strenuous physical challenges. As a result, firefighters have a high prevalence of occupationally-related medical and mental health disorders compared to the general public (Haddock et al., 2012; Haddock, Jitnarin, Poston, Tuley, & Jahnke, 2011;

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Jahnke, Poston, Haddock, & Jitnarin, 2013a; Jahnke, Poston, Haddock, et al., 2012; Jahnke, Poston, Jitnarin, & Haddock, 2012; Jitnarin, Haddock, Poston, & Jahnke, 2013; Poston, Haddock, et al., 2011; Poston, Jitnarin, Haddock, Jahnke, & Tuley, 2011; Soteriades et al., 2005; Soteriades, Smith, Tsismenakis, Baur, & Kales, 2011).

Women make up a very low proportion of the US Fire Service, with estimates ranging from 3.5–5.1% (Fox K, Hornick C, & Hardin E, 2006; Hulett DM, Bendick M, Thomas SY, & Moccio F, 2008). These rates are lower than in similar male-dominated occupations such as law enforcement (approximately 15% (Langton L, 2010)) and even the US Marine Corps, where all active duty personnel are trained in combat skills (U.S. Marine Corps, 2016). There are no national databases listing individual firefighters and their characteristics and individual departments are reluctant to release information on employees to researchers without their consent. Thus, participant sampling for occupational epidemiology research in the Fire Service typically involves first recruiting departments, and then firefighters within departments. Given the low numbers of women firefighters, published reports from these studies usually exclude women due to small sample sizes. For example, two previous Fire Service occupational epidemiology studies collected data in a combined 44 departments nationally and only 69 women firefighters were enrolled in the cohorts (Haddock, Day, Poston, Jahnke, & Jitnarin, 2015; Haddock et al., 2012). As a result, the occupational epidemiology literature on the Fire Service is almost entirely based on male firefighters and many key health concerns of women firefighters have yet to be studied. Fortunately, occupational scientists recently have begun to address the dearth of data on women firefighters. For example, the National Institute on Occupational Safety and Health included women in their cohort study of cancer among firefighters (Daniels et al., 2014).

One of the most pressing health concerns identified in the literature on male firefighters is the disturbingly high prevalence of heavy alcohol consumption and binge drinking (Carey, Al-Zaiti, Dean, Sessanna, & Finnell, 2011; Haddock et al., 2015; Haddock et al., 2012; Jahnke, Poston, & Haddock, 2014; Piazza-Gardner et al., 2014). Alcohol use screenings were conducted as part of two large surveillance studies in the US Fire Service (Haddock et al., 2012). The first survey was conducted with 656 firefighters from 24 fire departments randomly selected from the International Association of Fire Chief's (IAFC) Missouri Valley region. Results indicated over 50% of male career firefighters reported recent heavy (3+ drinks) or binge drinking (5+ drinks on an occasion for males), while 9% of firefighters who drank self-reported driving while intoxicated in the past 30 days.

The second surveillance study was a cohort study comprised of 20 fire departments nationally (Poston, Haddock, Jahnke, Jitnarin, & Day, 2013). The departments were purposively sampled (Shadish, Cook, & Campbell, 2001) based on whether or not they had well-developed wellness programs (career firefighters N=1,002). The prevalence of past 30-day heavy (44.7%) and binge drinking (50.2%) among male firefighters was similar to the previous study conducted in the Missouri Valley region. This compares to a binge drinking prevalence of 23.2% of adult men nationally (Kanny, Liu, & Brewer, 2012). Among male firefighters who reported a binge drinking episode in the past 30 days, 72.5% reported multiple episodes. The epidemic of alcohol abuse in the fire service is reflected in a recent

(Aug 9, 2013) alert on the firefighter listserve “The Secret List” warning that alcohol misuse is “a huge issue and one we continue to struggle with at every fire department.”

Unfortunately, aside from one descriptive study based on 31 women firefighters (Jahnke, Poston, Haddock, et al., 2012), there are no published data to determine whether the high rates of heavy and problem drinking found among males generalize to women firefighters. It is critical to determine whether women firefighters also are at risk for unhealthy levels of alcohol consumption due to its deleterious social and health effects (Bates, Bowden, & Barry, 2002; Booth & Feng, 2002; Bouchery, Harwood, Sacks, Simon, & Brewer, 2011; Breslow, Guenther, Juan, & Graubard, 2010; Caetano, 1987; Caetano & Cunradi, 2002; Caetano, Schafer, Fals-Stewart, O’Farrell, & Miller, 2003; Centers for Disease Control and Prevention, 2015; Chartier & Caetano, 2012; Cunradi, Caetano, Clark, & Schafer, 1999; Ehlers, Gilder, Criado, & Caetano, 2010; Galvan & Caetano, 2003; Greenfield, 1998; Jahnke et al., 2014; Kaplan et al., 2014; Klingemann, 2001) and association with occupationally-related risk factors, such as exposure to trauma (Jahnke, Poston, Haddock, & Murphy, 2016). This study fills the gap in the literature on women firefighters and alcohol consumption by presenting data from the first national study of the health of women in the fire service. In addition, we examine associations between problem drinking among women firefighters and key occupational risks, such as depression and trauma, injury, and job satisfaction.

METHODS

Sampling Methods

Most fire departments across the country operate under the auspices of their own local governing body (e.g., local city, district, or county government) so no central registry of firefighters currently exists. Female firefighters can be arguably described as a “hidden population.” There are no national lists of female firefighters and departments typically refuse to provide personal data to researchers on their firefighters unless a strong bond has been established and appropriate administrative clearance has been obtained. Thus, “cold contacting” all United States fire departments and asking them to pass on study information to female firefighters would require considerable resources and likely result in low rates of cooperation. Given the small number of women in most departments, and the fact that many have no women, contacting a random selection of departments likely would not provide a sufficient sample unless a very large number of departments agree to participate.

Given the lack of a central repository from which to recruit women firefighters and the lack of feasibility of alternative methods, this study used snowball sampling techniques to solicit participation (Shadish et al., 2001). These techniques are widely accepted for recruitment among underserved, hidden populations (Sadler, Lee, Lim, & Fullerton, 2010). The primary outlets used for recruitment included: 1) contacting participants from previous studies (Jahnke, Poston, Haddock, et al., 2012); 2) through *iWomen* membership, the only national organization representing women in the fire service; 3) email distribution through the International Association of Fire Fighters (IAFF), the national labor union for firefighters; 4) through the Center for Fire, Rescue & EMS Health Research’s email distribution list to previously collaborating fire service personnel; and 5) a posting on the “Secret List,” which is a popular email listserve in the fire service that is distributed to thousands of firefighters

worldwide. Secondary recruitment included requesting any women completing the survey to share the solicitation with their women colleagues. All women interested in participation were directed to a web-based survey.

Study protocols and consent procedures were approved by the Institutional Review Board (IRB) of the National Development and Research Institutes, Inc. The initial page of the survey served as the informed consent document, which described the scope and purpose of the study, provided contact information for the research team and the IRB, and explained the survey's confidentiality. Next, participants were asked whether they currently serve in the career or volunteer fire service. Those indicating volunteer status were thanked for their interest and asked to share their contact information for future research given the focus of the current study was career firefighters. We focused on career firefighters because they are exposed to the greatest risk, respond to the most calls, and spend the most time in the firehouse culture. Furthermore, most volunteer firefighters consider their participation as a form of community service, not their primary occupation.

Those indicating career status were provided an opportunity to share their contact information if they wanted to receive a thank-you gift (a portable phone charger) via the US Postal Service. All participants were then directed to the online survey. A total of 2,022 women responded to the survey and among those, 1,913 (94.6%) completed questions regarding their alcohol intake. This paper is based on the latter group of respondents. The firefighters were primarily from the US (98.1%) with most of the remaining residing in Canada. US firefighters were from every state except North Dakota and the District of Columbia. Table 1 contains descriptive data about the sample used in this paper.

Measures

Standard individual demographics (e.g., age, race/ethnicity) and occupational history (e.g., current rank and position, years in the fire service) were collected. Rank in the fire service and years of service were categorized as in previous studies of drinking among male firefighters (Haddock et al., 2015; Haddock et al., 2012).

Assessment of Alcohol Use—Items assessing alcohol use were modeled after common substance use questions in the civilian population on surveys such as the *National Survey of Drug Use and Health* and on surveys of military members (Vander Weg, DeBon, Sherrill-Mittleman, Klesges, & Relyea, 2006) and were identical to those used in past studies of male firefighters (Haddock et al., 2015; Haddock et al., 2012). On the study questionnaire, participants were informed that “One drink is equivalent to a 12-ounce beer, a 5 ounce glass of wine, or a drink with one shot of liquor.” *Alcohol use* was assessed with the item: “During the past 30 days, have you had at least one drink of any alcoholic beverage such as beer, wine, a malt beverage, or liquor?” *Level of alcohol consumption* was assessed with the item “During the past 30 days, on the days when you drank, about how many drinks did you drink on the average?” *Binge drinking* was assessed with the item: “Considering all types of alcoholic beverages, how many times during the past 30 days did you have 4 drinks or more on an occasion?” *Peak alcohol use* was assessed with the question “During the past 30 days, what is the largest number of drinks you had on any occasion?” *Driving while intoxicated*

was measured with the following item: “During the past 30 days, did you drive a car or other vehicle on any occasion when you perhaps had too much to drink?” Participants responded either “Yes” or “No.” *Potential alcohol abuse* was assessed with the CAGE questionnaire (O'Brien, 2008). The CAGE assesses whether participants: 1) felt the need to cut down their drinking; 2) felt annoyed by criticism of their drinking; 3) had guilty feelings about drinking; and 4) had taken a morning “eye opener” (i.e., a drink after awakening). Each affirmative response contributes one point to an overall score range of 0 to 4. Scores equal to or above 2 are considered to indicate potential problem drinking (O'Brien, 2008).

Past Diagnosis of Anxiety and Depressive Disorder—Participants were asked to report whether they had ever been diagnosed with an anxiety or depressive disorder. History of anxiety was assessed with: “Has a doctor or other healthcare provider EVER told you that you had an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive–compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder)?” History of depressive disorder was determined with: “Has a doctor or other healthcare provider EVER told you that you have a depressive disorder (including depression, major depression, dysthymia, or minor depression)?”

Current Depressive Symptoms—The Center for Epidemiological Studies Short Depression Scale (CES-D 10) was used to assess current depressive symptoms. The survey includes questions about the frequency of both feelings and behaviors during the past week and included response options of rarely or none of the time (<1 day), some or little of the time (1–2 days), occasionally or a moderate amount of time (3–4 days), and all of the time (5–7 days). The total score is the sum of points from each question, with a score of four or more indicating a possible concern for depression. (Irwin, Artin, & Oxman, 1999) The CES-D 10 has good test-retest reliability ($r=0.83$), and excellent sensitivity (97%), specificity (84%), and positive predictive value (85%) for a brief screening instrument (Irwin et al., 1999).

Traumatic Stress—Symptoms of trauma were assessed with the *Trauma Screening Questionnaire (TSQ)*. The TSQ is a brief screening instrument that consists of 10 symptom based questions including: intrusive thoughts, upsetting dreams, reliving of the experience, physical responses (e.g., fast heartbeat, churning stomach), sleep disturbances, irritability or angry outburst, difficulty with concentration, heightened awareness, and feeling jumpy or easily startled. A score of 6 or more positive responses suggests potential PTSD (Brewin et al., 2002). The following statement was added to the TSQ instructions to focus the respondent's responses on occupational trauma: “This questionnaire is concerned with your personal reactions to the traumatic event(s) you have experienced in the line of duty.”

Occupational Injury—Firefighters were asked whether they had experienced an occupational injury in the past 12 months based on an item developed for use in the fire service (Jahnke et al., 2013a; Jahnke, Poston, Haddock, & Jitnarin, 2013b).

Job Satisfaction—Participants were asked to rank their agreement to “I am satisfied with my job in the fire department” and “I would recommend being a firefighter to other women”

on a 5-point Likert scale from “Very much disagree” to “Very much agree” (Poston et al., 2013).

Statistical Modeling Plan

Although policies vary by department, firefighters are typically not allowed to be intoxicated or drink while on duty. Thus, our analytic strategy reflects the occupational culture of firefighters (no drinking possible on work days, which is typically 10 days per month). The time-frame for all alcohol intake assessment items was the previous 30 days. Descriptive statistics included typical intake and binge drinking among all participants and patterns of intake and drinking while intoxicated among those who consumed alcohol. Descriptive statistics also were stratified by the participant’s rank in their fire department and their years in the fire service. Rank was categorized into any firefighter (all personnel who were not company officers or chiefs), officer, and chief. Years of service was categorized based on previous studies of alcohol use among male firefighters (Haddock et al., 2012) for comparability: 0 to 7 years, 8 to 12 years, 13 to 20 years, and 21 years or greater. To examine the impact of rank and years of service on average intake, ordinal regression was used for multicategorical variables (e.g., alcohol use categories), logistic regression for dichotomous variables (e.g., binge drinking, drinking while intoxicated), and ANOVA for other variables. Based on ANOVA model diagnostics, data were transformed if necessary to improve model fit. For all regression models, the referent category for rank was “Firefighter” and for years of service was “0 to 7 years.”

RESULTS

Table 2 provides the typical intake and binge drinking among women firefighters. Overall, approximately 17% of participants were abstinent from alcohol and over 60% averaged two or more drinks on the days when they consumed alcohol. Nearly 40% of participants reported binge drinking at least once in the past 30 days. Among those who binged, the average number of episodes was 3.8 (SE = 0.2). Chiefs were more likely to consume two drinks per day compared to firefighters ($p = .0403$); otherwise, rank did not have a statistically significant association with average alcohol intake, binge drinking, or the mean number of episodes among those who binged. Years of service was significantly related to average intake ($X^2 = 14.19$, $p = 0.0027$), with those in the ‘8 to 12 years’ (OR = 0.75; 95% CI: 0.59, 0.96) and ‘21+ years’ (OR = 0.67; 95% CI: 0.52, 0.86) categories being more likely to be in a lower category of intake compared to those with 7 or fewer years of service. Years of service was significantly related to binge drinking ($X^2 = 13.47$, $p = 0.0037$). Specifically, those in the “21+ years” category were significantly less likely to binge drink compared to those in the ‘0 to 7 years’ group (OR = 0.62; 95% CI: 0.46, 0.82). Years of service was not significantly related to the number of episodes among those who binged.

Patterns of drinking and the rates of driving while intoxicated among women firefighters who consumed alcohol are presented in Table 3. A typical firefighter is on duty 10 days per month; therefore, the average woman firefighter who drank did so on nearly half of non-duty days (8.6; SE = 0.2) and 25% of firefighters consumed alcohol on 14 or more days. Neither the drinking pattern variables nor driving while intoxicated were significantly related to

rank. Years of service was significantly related to the number of days firefighters drank per month ($F = 5.56$, $p = 0.0009$). Specifically, participants with the fewest years of service (0 to 7 years) had significantly fewer days of drinking compared to those in the 13 to 20 years ($p = 0.002$) and 21 years and greater ($p = 0.0002$) categories. Years of service also was related to the highest intake during a month ($F = 4.15$, $p = 0.0061$), with those in the 0 to 7 years category having a significantly larger peak intake than those with 21 years or greater service ($p = 0.0005$). Years of service was not significantly associated with estimated drinks per month or driving while intoxicated.

Figure 1 presents results from the CAGE screening questionnaire. Among participants who drank alcohol, 16.5% screened positive for potential problem drinking. CAGE total scores were primarily influenced by two items: “Have you ever felt you should cut down on your drinking?” (28.4% indicated yes) and “Have you ever felt guilty about your drinking?” (16.6% indicated yes). Among participants who binge drank in the past 30 days, 28.1% screened positive on the CAGE in comparison to 6.0% of those who had not binged ($X^2 = 137.09$, $p < .0001$).

Table 4 presents associations between CAGE screening results and negative occupational outcomes. Models were adjusted for participant age. Problem drinking was strongly associated with indicators of emotional health. For instance, problem drinkers were more than 2.5 times as likely to have been diagnosed with a depressive disorder ($p < .0001$) or to have symptoms of post-traumatic stress ($p < .0001$). Problem drinkers were approximately 40% more likely to have been injured on the job in the past year ($p = .007$) and were less likely to recommend a career in the fire service to other women ($p = .002$). However, problem drinking was not significantly related to overall job satisfaction.

DISCUSSION

This study represents the first targeted occupational epidemiologic study of alcohol use among women firefighters. The majority of women firefighters (60.5%) drank more than the US Dietary guidelines suggest women consume (if they drink alcohol) (Office of Disease Prevention and Health Promotion, 2015). Previous studies of male firefighters found a past-month binge drinking rate of approximately 50% (Haddock et al., 2015; Haddock et al., 2012). Although the rate of binge drinking found among women in this study was lower (39.5%), it remains far higher than that reported among women in the US (12–15%) (Centers for Disease Control and Prevention, 2016; Substance Abuse and Mental Health Services Administration, 2014). In general, alcohol consumption was inversely related to years in the fire service, although rates of heavy (2 or more drinks/day (Office of Disease Prevention and Health Promotion, 2015)) and binge drinking were high in all categories of tenure. Alarming, 4.3% of women firefighters self-reported driving while intoxicated in the past month, with the highest rates found among Fire Chiefs (6.2%). This rate, although troubling, is less than that found for male career firefighters (9%) (Haddock et al., 2012).

Based on the CAGE screening questionnaire, (O'Brien, 2008) nearly 16.5% of women firefighters who reported using alcohol were at risk for problem drinking. This result may be a conservative estimate because the CAGE questionnaire may be less sensitive in women

compared to men (Dhalla & Kopec, 2007). Problem drinking was significantly associated with common mental health issues in the Fire Service, such as depression, anxiety, and symptoms of PTSD (Carey et al., 2011; Fullerton, Ursano, & Wang, 2004; Guo et al., 2006; Jahnke et al., 2014; Jahnke et al., 2016). A large national formative study on alcohol use among firefighters found a strong perception that occupational stress and repeated exposure to trauma lead to excessive alcohol use as a method of coping.(Jahnke et al., 2014) The data from this study supports the hypothesis that women firefighters use alcohol to cope with occupational stress and trauma. Firefighters who screened positive for problem drinking were also 42% more likely to report an occupational injury in the past year. Given the high economic costs and negative impact on job functioning caused by injuries among firefighters, the potential contribution of alcohol use is concerning (Jahnke et al., 2013a). Finally, firefighters who screened positive for problem drinking were significantly less likely to say they would recommend a career in the fire service to other women. Given the difficulties recruiting women into this occupation, creating a more inclusive Fire Service will likely require interventions targeting factors associated with excessive drinking (Jahnke, Poston, Haddock, et al., 2012).

This study has a number of strengths, including being the first targeted study of alcohol use among women firefighters with a large and diverse sample of participants. The primary limitations of the study are the sampling method, the cross-sectional design, and the potential for underreporting of alcohol use. Because there are no national lists of firefighters in the US and departments typically are reluctant to release personnel data, the sampling methodology used in this study represented the most feasible strategy to reach a large number of women firefighters. The large sample size and consistency of results with findings from studies involving randomly selected cohorts of male firefighters lends confidence to our data. Also, because the study was cross-sectional, it is not possible to determine the direction of relationships among alcohol use and negative occupational outcomes. As in the alcohol literature generally, the women surveyed in this study may have underreported their alcohol use, particularly those with heavier consumption (Boniface, Kneale, & Shelton, 2014; Stockwell, Zhao, & Macdonald, 2014).

This study, and previous research on male firefighters, suggests that a focused research program on alcohol use among firefighters is critically needed. Future studies should examine the rates of objectively assessed alcohol use disorders and changes in drinking trajectories across time, and determine the prospective relationships between risks for alcohol use (e.g., trauma, stress) and subsequent problem drinking. Such data would be critical for the development and testing of alcohol prevention and intervention programs for the Fire Service. Finally, to minimize response burden, some domains assessed in this study, such as job satisfaction, were measured with a single or a small number of items. Given the significant relationship between willingness to recommend firefighting as a career to other women and problem drinking, more focused studies using comprehensive measures of job satisfaction are needed

IMPLICATIONS FOR PRACTICE AND/OR POLICY

Given the high rates of heavy and binge drinking in women firefighters, healthcare providers are advised to screen for alcohol use problems in this population. Providers who treat alcohol use disorders in women firefighters should be aware of the role occupational stress and trauma may play in problem drinking. To facilitate this, the National Fallen Firefighters Foundation (NFFF) offers a training course for healthcare providers titled “Helping Heroes,” which provides information on occupational factors impacting a firefighter behavioral health and eight hours of continuing education credit (National Fallen Firefighters Foundation, 2017a). Fire departments are encouraged to adopt the NFFF’s Stress First Aid program, which provides training for leadership and firefighters to recognize and provide support for personnel experiencing stress, trauma, and related substance use problems (National Fallen Firefighters Foundation, 2017b).

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Figure 1. Percent “Yes” for CAGE Items and CAGE Total Score Indicating Problem Drinking. CAGE items: Cut Down = “Have you ever felt you should cut down on your drinking?” Annoyed = “Have people annoyed you by criticizing your drinking?” Felt Guilty = “Have you ever felt guilty about your drinking?” Morning Drink = “Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (eye-opener)?” Problem Drinking = CAGE score of 2 or greater.

Table 1

Demographic and Occupational Characteristics of Participants

Demographics	Percentage/Mean(SE)
Age	40.3 (0.2)
Race/Ethnicity	
White	91.8
Black or African-American	3.9
Asian	0.7
Native Hawaiian or other Pacific Islander	0.4
American Indian or Alaska Native	0.7
Other	2.5
Location	
Eastern US	38.0
Central US	30.6
Western US	29.6
Other	1.8
Occupational Characteristics	
Years of Fire Service Experience	13.7 (0.2)
Rank in the Department	
Firefighter	69.3
Officer	24.7
Chief	6.0

Note: percentages may not add to 100 due to rounding.

Table 2

Typical Intake and Binge Drinking Among Women Firefighters in the Past 30 Days

	Alcohol Use on Days When Drank				Binge Drinking	
	Abstinent n(%)	1 Drink n(%)	2 Drinks n(%)	3 Drinks n(%)	4+ Drinks n(%)	Yes n(%)
All firefighters	346 (18.1)	453 (23.7)	651 (34.0)	248 (13.0)	215 (11.2)	748 (39.5)
Firefighters by Rank						
Firefighter	253 (19.6)	290 (22.6)	444 (34.6)	163 (12.6)	136 (10.6)	511 (39.8)
Officer	51 (13.3)	94 (24.5)	142 (37.1)	61 (15.9)	34 (9.1)	147 (38.7)
Chief	13 (14.0)	36 (38.7)	22 (23.7)	10 (10.8)	12 (12.9)	33 (35.5)
Years of Service						
0 – 7	77 (17.3)	86 (19.5)	159 (36.1)	69 (15.7)	50 (11.3)	188 (42.7)
8 – 12	75 (19.6)	107 (28.1)	109 (28.5)	51 (13.3)	41 (10.7)	150 (39.2)
13 – 20	85 (15.5)	119 (21.6)	217 (39.5)	74 (13.5)	55 (10.0)	231 (42.2)
21+	77 (20.6)	104 (27.9)	120 (32.23)	39 (10.5)	33 (8.9)	117 (31.5)
						4.7 (0.5)

Note: percentages may not add to 100 due to rounding.

[†] Mean number of drinks among firefighters who binge drank at least once in the past 30 days.

Table 3

Patterns of Intake and Drinking While Intoxicated Among Women Firefighters Who Drank in the Past 30 Days

	Days Drank Mean (SE)	Highest Intake Mean (SE)	Est. Drinks/Month Mean (SE)	Drove Intoxicated n (%)
All Firefighters	8.6 (0.2)	3.9 (0.1)	21.3 (0.7)	67 (4.3)
Firefighters by Rank				
Firefighter	8.5 (0.2)	4.0 (0.1)	21.5 (0.9)	37 (3.6)
Officer	8.6 (0.4)	3.7 (0.1)	20.3 (1.2)	18 (5.4)
Chief	9.9 (0.8)	3.8 (0.3)	24.3 (3.1)	5 (6.2)
Years of Service				
0 to 7	7.6 (0.3)	4.2 (0.2)	20.3 (1.7)	12 (3.3)
8 to 12	8.4 (0.4)	4.1 (0.2)	20.8 (1.3)	11 (3.6)
13 to 20	9.0 (0.3)	3.9 (0.1)	21.9 (1.1)	23 (4.9)
21+	9.6 (0.4)	3.5 (0.1)	22.5 (1.4)	12 (4.0)

Note: percentages may not add to 100 due to rounding.

Table 4

Problem Drinking and Negative Occupational Outcomes Among Women Firefighters Who Drank in the Past 30 Days

	CAGE Screening		
	Positive (%) n = 259	Negative(%) n = 1,312	
Emotional Health			
Anxiety Disorder Diagnosis	24.3	14.9	1.98
Depression Disorder Diagnosis	35.6	18.9	2.55
CESD Depression	41.9	25.2	2.32
TSQ Trauma	19.5	8.9	2.38
Occupational Injury and Job Satisfaction			
Injured Past 12 months	53.6	44.0	1.42
I am satisfied with my job in the fire department			0.92 [‡]
Very Much Agree	37.8	36.0	
Agree	34.9	40.9	
Neutral	12.5	13.1	
Disagree	9.6	7.1	
Very Much Disagree	5.2	2.9	
I would recommend being a firefighter to other women			0.67 [‡]
Very Much Agree	38.4	44.7	
Agree	27.6	28.0	
Neutral	16.0	17.8	
Disagree	10.0	5.5	
Very Much Disagree	8.0	4.3	

[‡]Odds ratios greater than 1.0 indicate increased odds for those who screened positive on the CAGE problem drinking questionnaire relative to those who screened negative.

[‡]Proportional odds ratios greater than 1.0 indicated an increased odds for those positive on the CAGE questionnaire to fall into a higher (i.e., greater satisfaction) category of satisfaction. Odds ratios are adjusted for participant age. Percentages may not add to 100 due to rounding.