

# A Characterization of Alcohol Use In Active Military Personnel at Fort Riley, KS

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## **Introduction**

My Capstone Field Experience was spent with the Fort Riley Public Health Department in Fort Riley, KS. The experience consisted of two parts. The first included observing and working with the various areas within the Public Health Department in order to develop an understanding of the range of specialties involved in public health services. Secondly, I conducted a research project to characterize the use of alcoholic beverages by active duty personnel at Ft. Riley. I describe the current trends in use of alcohol by military personnel, discuss negative outcomes involved with excessive drinking, and explore current as well as possible new mitigation strategies to reduce its negative impact.

## **Fort Riley Public Health Department**

The Fort Riley Public Health consists of several departments which work together to protect the physical health and food safety of Fort Riley residents and employees. While each department works individually to oversee certain aspects of public health, they often work together to ensure complete safety of the soldiers and employees. The areas of focus included under the oversight of the Public Health Department are: Environmental Health, Hearing Safety, Industrial Hygiene, Public Health Nursing, and Occupational Health. In addition, the Public Health Department fosters a close partnership with the Veterinary Services department. The first half of my field experience involved spending time with each of these specialty areas. There, I gained knowledge of each area's responsibilities and specific duties and how they contribute to the overall health system of the Fort. Along the way, I was exposed to many learning opportunities and had the opportunity to see firsthand how day-to-day operations are run. In the following pages is a detailed description of each area and their specific responsibilities.

## Environmental Health

The main objective of Environmental Health is to ensure community safety and health. The environment is our physical surroundings and what we interact with throughout the day. Environmental Health is charged with making sure that we are not exposed to undue environmental health risks in our daily routines. The staff does this through a series of routine inspections and assessments. The areas covered by Environmental Health include food service sanitation and inspections, water quality and surveillance, disease vector surveillance, hospital waste management, and Child Development Center sanitation and inspections.

Duties in food service sanitation and inspection comprise of monthly inspections of all food service providers on Fort Riley. They inspect everything from the hospital cafeteria, to child care centers, to fast food restaurants, to the food court at the Post Exchange (mini-mall). They look at food storage, preparation, and serving procedures to ensure that the food eaten by the Fort Riley community has not been exposed to unsafe conditions at any point in the service chain. The staff uses army guidelines similar to the USDA Food Code in order to determine if any violations have occurred. They look for proper storage of food in pantries, time and temperature logs, equipment cleanliness, and food handler safety and protection.

In water quality surveillance, Environmental Health staff is responsible for collecting and transporting water samples from ground wells, waterlines, and recreational water sources on Fort Riley. Water samples are collected on a weekly basis, with the area being sampled rotating to various parts of the Fort Riley community each week. This ensures that all parts of the water system are tested on a regular basis. Additionally, if any complaints about water quality are received extra samples are taken from the problem area. On site water tests include testing for

calcium, nitrates, and pH. Samples are also collected, put into cool storage and taken back to the lab for fecal coliform bacteria.

Vector surveillance is done at Fort Riley to monitor the spread of certain vector born diseases. The most common type of surveillance done is on mosquitoes. Insect traps are set out at different, mosquito friendly, locations across Fort Riley. Mainly low lying areas next to a water supply. The traps are cylindrical in shape and use a specific chemical to attract and kill the mosquitoes. Once they enter the trap through a mesh cover, the mosquitoes cannot escape and the chemical kills them. They then drop down into a collection cup. After collection, mosquitoes are separated from other debris and insects and then identified. West Nile Virus is a disease of great concern across the United States and specifically the Midwest. Because of the great threat that the virus is, controlling and tracking its vector is important. This is why staff at Environmental Health conducts vector surveillance. If any of the mosquitoes found in the trap are identified as a species capable of carrying the virus, it is shipped to a regional lab for further testing. Environmental Health will also identify ticks and assess them for disease threats. This occurs mostly through an as-needed basis. They do not conduct active surveillance for ticks.

Hospital waste management deals with controlling hazardous materials and bodily fluid waste in a medical setting. Things like used syringes and needles, empty drug vials, IV lines, and catheters must be disposed of separately from other waste materials and are subject to strict regulations. Environmental Health conducts monthly inspections at the hospital to ensure that this waste is disposed of properly. The inspection also reviews the written mitigation strategies in place to control possible spills of biologically or chemically hazardous materials.

A Child Development Center is synonymous with a daycare center in the civilian world. These centers care for children ranging from infants to school age, and provide learning and

recreation opportunities for children in a supervised setting. Meals and snacks are also provided. Environmental Health staff conducts monthly inspections to ensure that the classrooms and recreation area are safe and secure. Kitchens are also subject to inspections similar to other food service establishments.

## Army Hearing Program

Because of the work that a soldier does, he or she may be exposed to excessive noise levels for great lengths of time. Soldiers deal with gunfire and large ammunition impacts during range practice. They are also exposed to heavy machinery operations if they work in mechanics or any type of machinest job. Additionally, pilots are exposed to the constant drone of helicopter propellers when they fly. With such a wide variety of occupations involving exposure to potentially unsafe noise levels, the Army instituted an Army Hearing Program. This outlines measures to prevent noise induced hearing loss. The army's program is based on the Occupational Safety and Health Administration's (OSHA) Code of Federal Regulations, specifically 29CFR1910.95. This addresses occupational noise exposure. It provides regulations on noise abatement, hearing monitoring, record keeping, and hearing protection and training.

In the army, every soldier receives an initial hearing test to set a baseline. This test is repeated every year in order to monitor current hearing levels. Tests are compared to previous ones to identify any changes in hearing ability. With these evaluations it is easier to recognize problems early and treat them.

The ultimate goal however, is to achieve no more than normal, age-related, hearing loss. To achieve this goal, the Army Hearing Program conducts several hearing education seminars to units throughout the year. Also, every unit has a Hearing Conservation Officer who is in charge

of making sure the unit uses proper hearing safety techniques. A large majority of soldiers may have hearing protection, but may not use it correctly. The hearing program works with Hearing Conservation Officers to provide soldiers with plenty of ear plugs, and can work with supervisors to get specialized ear protection if it is necessary.

## Industrial Hygiene

The Industrial Hygiene department works to recognize, evaluate, and control workplace conditions that may cause injury or illness to workers. The staff in Industrial Hygiene rely heavily on the recommendations in the OSHA 29CFR1910. These regulations set standards for ventilation, noise exposure, respiratory protection, confined space requirements, and hazard communication requirements. They also use 29CFR1910 to make safety recommendations for contaminants such as asbestos, air contaminants, lead, and hexavalent chromium. In a typical day, staff at Industrial Hygiene will conduct workplace assessments in these various areas and then make recommendations about how to improve work areas to protect the health of workers. Other times, complaints may be received about certain aspects of a facility, or employees may complain about health issues. Industrial Hygiene will conduct evaluations and then make recommend how to improve work areas for the health and safety of soldiers and employees.

Proper ventilation is very important to Industrial Hygiene. In a basic ventilation assessment, staff will measure the air movement in a confined space or work hood to ensure that enough clean air is reaching workers. This type of assessment can be done in various situations such as kitchens, offices, classrooms, operating rooms in the hospital, and welding bays. At the same time, Industrial Hygiene staff can evaluate indoor air quality. They look for mold or bacteria in vents and other air sources and test to see if heating and cooling units work properly.

Temperature and humidity are also tested in all enclosed rooms because certain combinations of these could lead to mold buildup.

Another responsibility of Industrial Hygiene is to conduct noise studies for employees on base. The staff will place a noise dosimetry calculator on a person and leave it on throughout the work day. This calculator records noise levels that the individual is exposed to as they go about their routines. Staff can then get a print out of the recording to show how much noise the individual is exposed to and if they are exposed to dangerous levels for an extended amount of time. If necessary the staff will make recommendations about the use of hearing protections.

Ergonomics is the last major responsibility of Industrial Hygiene staff. This is the study of workplace design in order to reduce fatigue and improve productivity and efficiency. For example, staff members did an ergonomic assessment for an office worker with a spine injury. They designed a desk and chair specifically suited to fit her need which enabled her to perform her job better. They can also conduct industrial ergonomic assessments to improve efficiency in the workplace.

## Public Health Nursing

Public Health Nursing works with active duty personnel and their dependants to achieve overall wellness and disease prevention. Areas covered by Public Health Nursing include Child and Youth Services Health Inspections and Immunization Screenings, health education and outreach for soldiers, and investigating and tracking of disease outbreaks.

Child and Youth Services are subject to Army Regulation 608-10. This outlines what childcare services a military installation must provide for families. Child Development Centers should provide a safe, secure and supervised environment for young children while their families

are at work. This part of Public Health Nursing also works to ensure young children have the correct immunizations.

A lot of effort goes into Health Promotion and Education. They offer many programs to help improve an individual soldier's health, including health screenings and tobacco cessation programs. These programs are readily available and easily accessed for soldiers needing assistance. Health screenings are conducted at several convenient points on Fort Riley. These test blood pressure, cholesterol, Body Mass Index, and blood glucose to give individuals a snapshot of their health. Based on the results from the screening, recommendations can be made for further follow-up if necessary. Another well utilized program is the tobacco cessation counseling.

Investigation and tracking of disease outbreaks is the third main part of Public Health Nursing. The nursing department reviews emergency room cases and hospital admissions for reportable diseases each day. All influenza like illnesses and respiratory cases must be reported to the State of Kansas for disease tracking purposes. Also, if there are any diagnosis made for a highly communicable disease in the hospital the staff in Public Health Nursing will initiate an outbreak investigation to control the spread of any contagious diseases.

## Occupational Health

Occupational Health works to identify known health risks associated with specific jobs. Given these known risks, staff then develops routine requirements of medical surveillance and screenings to mitigate those risks. There are many different programs in place in Occupational Health to mitigate specific health hazards. These programs are an integral part of ensuring the health and safety of soldiers and employees.



Occupational Health provides yearly physicals, injury prevention and control programs, work related immunizations, and worksite evaluations. Incorporated into these programs are tests to monitor hearing, vision and breathing capabilities of employees, deployment physicals for soldiers and pregnancy surveillance. In pregnancy surveillance, Occupational Health will evaluate the workplace and issue any restrictions or precautions that are necessary to ensure the safety of the woman and baby. Occupational Health also handles in-processing of new employees. They are given an initial physical to establish a baseline and then comparisons are made each year so problems can be detected early.

## Veterinary Services

Fort Riley Veterinary Services works closely with the Public Health Department to ensure the health and safety of the Fort Riley Community. Traditional vet tasks relating to public health include control, treatment and prevention of zoonotic diseases and a rabies control program. Other tasks include food defense, comprising of sanitary inspections of food facilities and dealing with food recalls.

Veterinary Services provide routine health care to pets of service members. This includes yearly vaccinations and deworming and yearly wellness exams. Any surgery or further diagnostics for illnesses are referred to either Manhattan or Junction City. The clinic does provide full services for military service dogs. This routine health care and prevention is vital in zoonotic disease prevention. A zoonotic disease is one that can spread from animals to humans. Additionally, Veterinary Services handles all animal bite reports. These are then evaluated for potential rabies threats.

In food safety, Veterinary Services deals with receiving shipments and storing food until it is either bought by consumers or prepped for serving. Every piece of food that enters Fort Riley must come from a verified and approved source. Veterinary Services must inspect all incoming shipments to ensure that they are from approved sources and are safe. This includes shipments for the Commissary (grocery store), hospital, and other retail food establishments. They check all food items against a federal verification database. If the items are not from verified sources, the shipment is rejected. All received shipment receipts are kept and entered into a database. This makes it easier to identify potential problem items if a recall is issued.

Along with source verification, veterinary services staff will inspect all incoming food shipments for quality control and accuracy. They pay special attention to fresh produce, shelled eggs, dairy products and meat. They will also inspect the food storage capabilities at other food service facilities. They inspect Child Development Centers, AAFES establishments (convenience stores), and ready to eat products used when soldiers are deployed.

## **Characterization of Alcohol Use**

Alcohol consumption is a very common occurrence in the United States society. It plays a role in many recreational activities and is often considered a natural part of life. Unfortunately, drinking alcohol is known to have immediate effects on the body and can lead to long term health hazards if not done responsibly. According to the Centers for Disease Control (CDC), excessive alcohol ranks third in lifestyle related causes of death. From 2001-2005 it is approximated that 79,000 deaths were caused by alcohol misuse annually (Alcohol and Public Health). Drinking too much at one setting causes multiple health risks. Immediate effects include unintentional injury, violence, risky sexual behavior, miscarriage in pregnant women, and alcohol poisoning. Potential long-term health hazards include neurological problems, cardiovascular problems, increased chance of cancer, and several liver diseases (Alcohol and Public Health). Along with the health hazards, misuse of alcohol contributes to losses in workplace productivity, health care expenses, law enforcement expenses and motor vehicle crash costs totaling \$223.5 billion in 2006 (CDC Features). These risks and costs put a very heavy burden on our society. It is made even more so by the fact that this is a nationwide problem. Every state faces these issues and it is becoming very difficult to control and discourage alcohol use. The problem of alcohol use is also found on the Fort Riley military installation. This army base is a community that houses thousands of soldiers and employs countless people and must provide ways to support and care for that population while mitigating potential problems. Unfortunately, despite the national statistics on alcohol use and misuse, a detailed characterization of the issue had not been done at Fort Riley before. This research project was initiated to determine the current state of alcohol use on the army base. I have compiled into central location information about sales, consumption habits, availability, consequences of

alcohol use and current controls. I have then provided recommendations for reducing the negative impact of alcohol use based on what has worked in civilian populations.

First, we must establish some definitions that will be used quite frequently throughout the rest of this paper. Excessive drinking is a term to describe the misuse of alcohol through heavy or binge drinking. Heavy drinking for women is consuming more than one (1) drink per day on average. For men, heavy drinking is consuming more than two (2) drinks per day on average (Alcohol and Public Health). Binge drinking is having four (4) or more drinks on a single occasion for women. For men, it is having five (5) or more drinks in one sitting (Alcohol and Public Health).

Alcohol consumption is a problem in all branches of the military, not just the Army. This problem has been made evident through the 2008 Department of Defense Survey of Health Related Behaviors among Active Military Personnel. This is a comprehensive survey that characterizes a number of health related behaviors including alcohol use, tobacco use, drug use, and exercise routines. The survey is given to sample populations in all military branches and the data is published every few years, the latest being from 2008. It is interesting to note that across all military branches, “military personnel were significantly more likely to drink heavily than were their civilian counterparts” (2008 DOD Survey). This difference was most notable in the younger age groups of 18 years to 35 years of age. Also in my literature review of the 2008 Department of Defense Survey of Health Related Behaviors among Active Duty Military Personnel, I found that in 2008 47% of all DOD service personnel were classified as binge drinkers, and binge drinking increased significantly from 35% to 47% in the time between 1998 and 2008. Pay grade, which is also associated with rank influence drinking rates as well with higher pay and higher ranking correlating to a lower tendency to drink (2008 DOD Survey).

Included in this report are graphs displaying various comparisons from the Department of Defense report. However, these graphs, and the data from the report, are not adjusted to account for sociodemographic differences between the service branches. Things like age, ethnicity, and gender demographics vary between services and thus could cause some of the observed differences. Nevertheless, this unadjusted data provides information on the comparative extent of the problem of alcohol use between military branches. Figure 1 graphically shows the increasing trend in binge drinking of each military branch. Figure 2 displays a graphical representation specifically of the Army's rate of heavy drinking (2008 DOD Survey).

Fig. 1- Binge Drinking by Service (2008 DOD Survey)

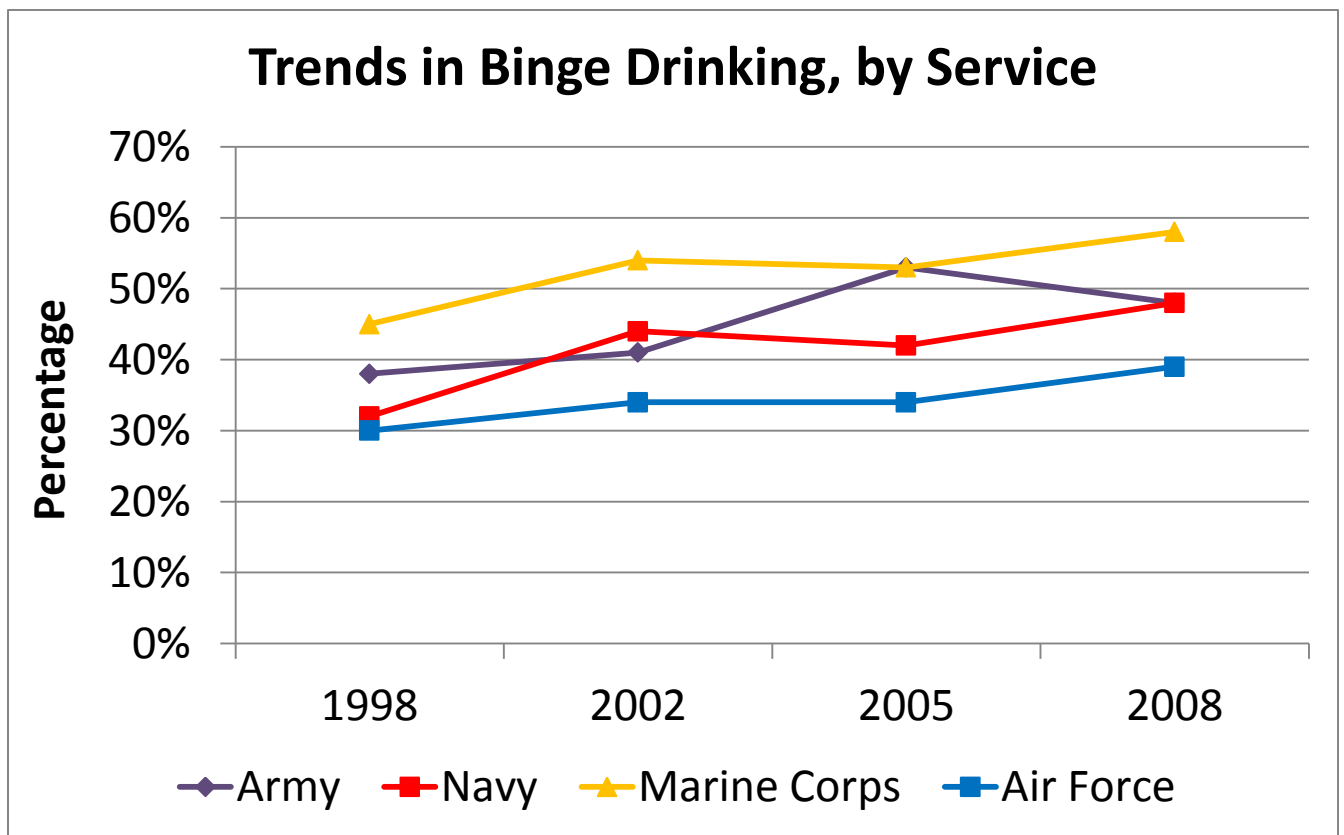
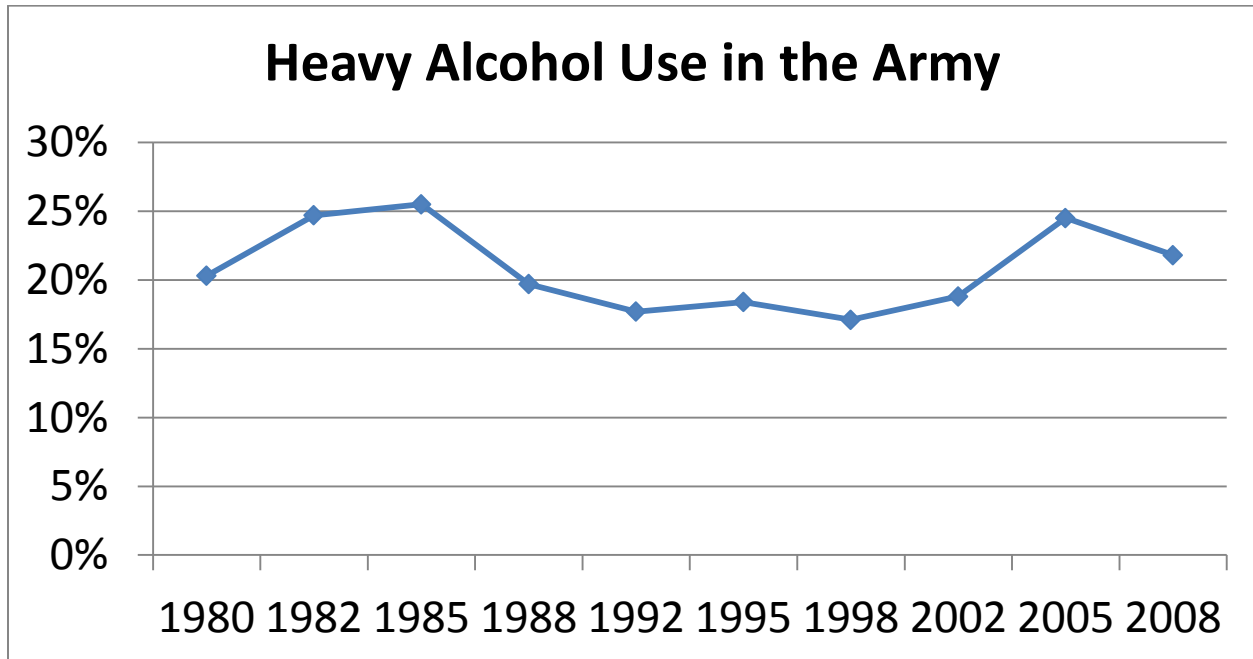


Fig. 2- Heavy Alcohol Use in the Army 1980-2008 (2008 DOD Survey)



### Alcohol Sales

A useful tool to judge alcohol consumption is through tracking sales amounts for alcoholic beverages. At Fort Riley soldiers can purchase alcohol at any AAFES store on the base. This is the Army and Air Force Exchange Service, and is the equivalent to a convenience store in the civilian world. There are seven AAFES stores on post all of which carry a selection of alcohol. This alcohol is available for purchase any time during operating hours (Mr. Carpenter). Figure 3 shows the totals dollar amount of alcohol sales at all AAFES establishments from 2007 through 2010. It is encouraging that dollar sale amounts have started to level out or possibly even decline in the past two years. However, it is too soon to determine if this is a declining trend that will continue into the future. Another encouraging note is that while alcohol sales declined slightly from 2009 to 2010, the troop population at Fort Riley has actually

increased (Mr. Carpenter). What could not be determined though was whether or not soldiers were purchasing more alcohol off base at this time.

We can also determine what type of liquor is being purchased and consumed more by looking at sales data. By dividing total sales numbers into portions of sales devoted to wine, beer, or hard liquor we can see that most of the alcohol sold at Fort Riley was considered hard liquor. This includes rum, whiskey, and vodka. Table 1 displays the actual dollar amount spent on each type of alcohol sold at Fort Riley.

Fig. 3- Total Alcohol Sales at AAFES establishments by year

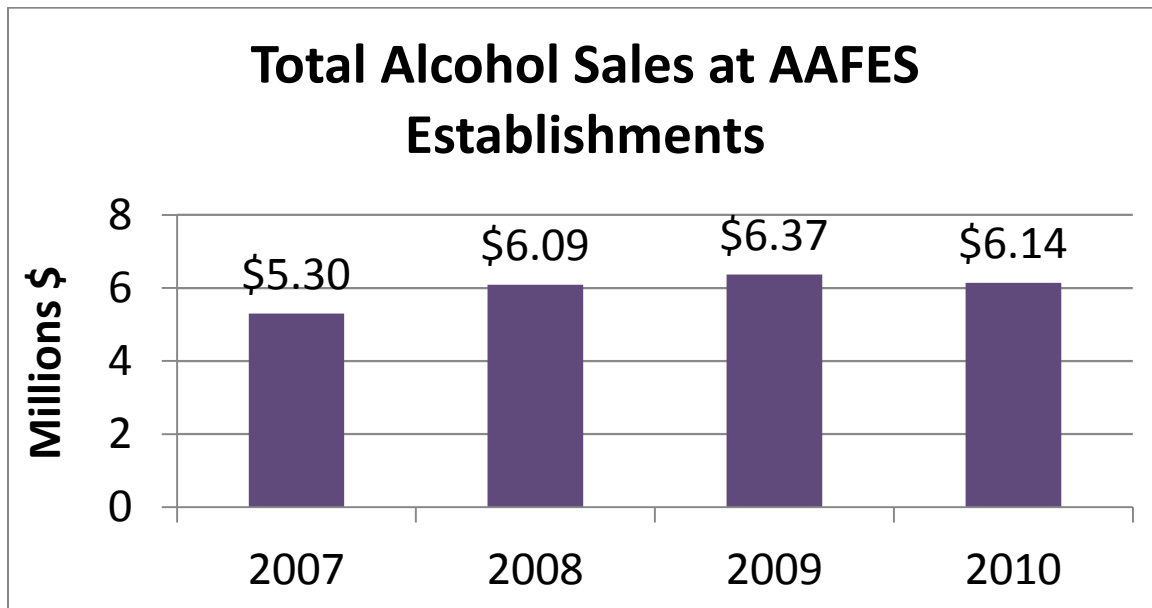


Table 1- Sales dollars by type of alcohol sold

Actual Dollar Sales by Type, per Year

Year	Wine	Beer	Hard Liquor
2007	\$607,217	\$2,321,667	\$2,370,689
2008	\$634,605	\$2,629,700	\$2,824,602
2009	\$660,270	\$2,668,489	\$3,041,252
2010	\$701,408	\$2,491,053	\$2,951,511

**Area Price Survey**

The price for buying alcohol varies greatly from city to city. This was made apparent with the completion of a local area price survey. For this data, I gathered pricing information at various liquor stores in Manhattan, Ks., Junction City, Ks., and Fort Riley, Ks. I surveyed three locations in Manhattan and Junction City; all prices were the same at Fort Riley. One location in the civilian communities was termed “discount” or “wholesale” liquor. This tried to account for the known discount military personnel get by buying on base. The three individual prices were averaged together and sales tax was added to the prices. It should be noted that there is no sales tax at Fort Riley. It was immediately obvious that there was a significant discount for soldiers buying alcohol on a military installation. I also wished to determine the percent increase in price Fort Riley would need to initiate in order to reach off post pricing. To do this I subtracted Manhattan’s price from Fort Riley’s price, then divided that number by the Fort Riley price and multiplied by 100. The same was done for Junction City’s pricing. Table 2 displays that information.



In addition to sale price, hours of availability also contribute to alcohol consumption. The State of Kansas liquor laws state that liquor can be sold, for off premise consumption, on Monday through Saturday from 9 am until 11 pm. Liquor can be sold on Sunday from 12 to 8 pm (Kansas Department of Revenue). A military installation is not subject to the same laws. Liquor can be sold at any time during store operating hours. At Fort Riley, there is at least one AAFES store that is open 24 hours a day (Mr. Carpenter). This discrepancy in availability could lead to an increased consumption of alcohol by soldiers living at Fort Riley.

Table 2- Area Price Survey

<b>Alcohol Type</b>	<b>Ft. Riley</b>	<b>Manhattan w/ 8.55% sales tax</b>	<b>Junction City w/ 9.55% sales tax</b>	<b>% increase to reach off post pricing</b>
<b>Beer (30 pack)</b>				Manhattan/ Junction City
Coors Light	\$19.69	\$23.76	\$22.69	20.7%/ 15.2%
Budweiser	\$19.69	\$23.39	\$22.69	18.8%/15.2%
Bud Light	\$19.69	\$23.39	\$22.69	18.8%/ 15.2%
<b>Vodka (750ml)</b>				
Smirnoff	\$16.00	\$22.35	\$17.45	39.7%/ 9.1%
Skyy	\$17.95	\$20.78	\$20.55	15.8%/ 14.5%
Grey Goose	\$28.75	\$37.17	\$35.70	29.9%/ 24.2%
<b>Whiskey (750ml)</b>				
Jim Beam	\$11.30	\$18.44	\$16.97	63.2%/ 50.2%
Jack Daniels	\$22.35	\$26.86	\$28.47	20.2%/ 27.4%
Crown Royal	\$24.50	\$30.11	\$28.91	22.9%/ 18.0%
<b>Rum (750ml)</b>				
Captain Morgan	\$14.30	\$24.58	\$21.57	71.9%/ 50.8%
Bacardi	\$14.00	\$17.68	\$16.86	26.3%/ 20.4%
<b>Wine/ Wine Coolers</b>				
Wine	\$11.12	\$12.64	\$14.44	12.9%/ 29.8%
Smirnoff Ice	\$7.45	\$8.67	\$8.19	16.4%/ 9.9%
Mike's Hard Lemonade	\$8.00	\$8.67	\$8.86	8.4%/ 10.8%

## **Consequences of Alcohol Use**

The negative effects of alcohol misuse have been discussed in the Introduction to Research section of this paper. There are numerous short- and long-term consequences to excessive alcohol consumption. To get a better understanding of the negative impact of alcohol at Fort Riley, we considered the hospital admission and emergency room encounters that involved alcohol. Because of confidentiality concerns, only total number of admissions was available for use. Also, because of the short time on the request, we were only able to gather the last six months of data. However, we can still see that 40 active duty military personnel were admitted to the Irwin Army Community Hospital in Fort Riley for alcohol intoxication between January and June of 2011. That is nearly 7 cases per month. The number is even higher in emergency room encounters for alcohol intoxication. 56 active personnel were seen over six month, or just over 9 cases each month (Cpt. Obanion). It is also disturbing that there were multiple individuals who were seen more than once.

## **Current Controls**

After examining the current state of alcohol use and availability at Fort Riley, I then considered current methods in place to control alcohol misuse. According to interviews with Ltc. Benne, Chief of Public Health, there are a number of strategies in place to help mitigate the negative effects of alcohol consumptions. There are monthly Unit Safety Briefings where each unit discusses any problems or troubles with a number of health and safety risks, including alcohol use (Ltc. Benne). Leadership also plays a large role in discouraging bad drinking habits. The DOD Survey states that “Across all services, personnel who believe that at least some of their supervisors use alcohol have higher rates of heavy alcohol use compared to those who

believe their supervisors do not drink or do not know if their supervisors drink.” This statement exemplifies the influence that superiors have over the rest of their unit. Further preventative measures at Fort Riley include breathalyzer testing during drug screenings and DUI monitoring and reporting. Fort Riley also has programs in place to help soldiers once drinking has occurred. Riley Ride is a taxi service, and the Battle Buddy program promotes the use of designated drivers when soldiers go out (Ltc. Benne).

## **Recommendations**

There are several strategies that have been used in the civilian world to decrease the negative impacts of excessive drinking. The Guide to Community Preventive Services is a task force that works to help communities develop programs to improve their safety and health. In order to make a recommendation the task force systematically reviews a large number of studies from various scientific sources to assess their relevance and quality. From the evidence and findings in their search the task force recommends for, finds insufficient evidence, or recommends against specific interventions. Based on their reviews, the Community Guide recommends several interventions to control alcohol use which could be easily implemented into a military setting. These interventions include: increasing alcohol taxes/pricing, maintaining limits on days and hours of sales, and regulation of alcohol outlet density (Preventing Excessive Alcohol Consumption).

Increasing alcohol pricing and taxes has been shown to have a negative effect on alcohol purchasing and consumption. We have already seen the huge gap in pricing between on-post and off-post retailers. Much of that difference is in the form of taxes, but there is no doubt that it is much cheaper to buy alcohol on base. Therefore, soldiers will be more willing to spend money

on alcohol when it is cheaper. The task force also found that removing restrictions on sale hours led to an increase in E.R. admissions, injuries, fighting and driving while intoxicated. And there is a positive association between outlet density and excessive alcohol consumption and related hazards (Preventing Excessive Alcohol Consumption). With more locations selling alcohol in the relatively small area of Fort Riley, it is much easier for soldiers to find it.

Recently a bill was introduced to the Kansas State Legislature that would have a huge impact on alcohol availability if it were to become a state law. Senate Bill 54 was designed to allow the Alcohol Beverage Control to issue retail liquor licenses to any qualified applicant (Senate Bill 54). The bill would loosen the restrictions on liquor licenses and would allow convenience and grocery stores to carry hard liquor. This is currently not allowed, and grocery stores can only sell 3.2% alcoholic beverages. The bill would also make it possible for 24 hour a day sales, which would greatly increase the availability of alcoholic beverages to the public. Currently, in May of 2011, the bill had been withdrawn from the Senate floor and re-referred to committee for further review. However, there has been a lot of support for this bill from industry and will undoubtedly be re-introduced in the future (Senate Bill 54). If it should pass, availability of alcohol would be greatly increased for soldiers and civilians.

## **Conclusion**

In conclusion, there is no doubt that the use of alcohol causes immediate and long-term effects on the health. And the problem of drinking excessively seems to be exacerbated in the military. Despite the differences in availability and pricing between military and civilian populations, there are steps currently in place that can be used to control the excessive use of alcohol. And there are strategies that can be adapted to further discourage alcohol misuse.

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