

LEGAL STATUS OF ALCOHOL, POPULATION DENSITY, AND THE INCIDENCE
OF DUI ARRESTS IN ALABAMA

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LEGAL STATUS OF ALCOHOL, POPULATION DENSITY, AND THE INCIDENCE
OF DUI ARRESTS IN ALABAMA

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John Hosein Malek-Ahmadi, son of Parviz and Marjorie Malek-Ahmadi, was born on July 17, 1983 in Lubbock, Texas. He graduated with honors from Coronado High School in 2001. John then pursued his undergraduate degree at The University of Arizona, graduating cum laude with a sociology Bachelor of Arts in 2005. Shortly thereafter, he accepted an offer to enter the sociology graduate program at Auburn University in 2006. Additionally, John served as a graduate teaching assistant during his time at Auburn.

THESIS ABSTRACT

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The purpose of this study is to identify the effect legal status of alcohol and population density has on the incidence of DUI arrests in the state of Alabama. It was expected that dry counties with low population densities will possess the highest rates of DUI arrests. The results of the study were mixed. Wet counties did possess higher rates of DUI arrests. Areas with higher population densities also showed higher DUI arrest rates. Rates of DUI arrest for the 2006 year were acquired from the Alabama Criminal Justice Information Center for 65 of the 67 counties in the state. Demographic variables that assisted in the formulation of the study were obtained from the U.S. Census 2000 report and the Alabama Beverage Control Commission.

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CHAPTER 1
INTRODUCTION

Evaluating the DUI Problem

Drinking and driving remains a pervasive and persistent problem in the United States. An alarming number of individuals die each year in automobile related accidents, many of which involve the presence of alcohol. According to the Fatality Analysis Reporting System (FARS), 39% of all fatal motor vehicle accidents involve alcohol. The number of lives lost each year to alcohol related crashes is staggering. The most recent National Highway Traffic Safety Administration report states that 17,602 people were killed in alcohol related motor vehicle crashes in 2006. Drunk driving incurs numerous social costs beyond loss of life. These include property damage, workforce defects and the placement of additional strain on the criminal justice system. Holder (1997) reports that alcohol-related behavior increases threats to the personal safety of citizens in their homes and on the street. Due to the detrimental impact of intoxicated driving, this phenomenon has been identified as an important concern to public safety. Thus, it should be expected that numerous local, state, and national agencies have been proactive in the process of reducing such incidents. Despite somewhat concerted efforts to address the DUI problem, program implementation has been ineffective. For instance, there is evidence that safe ride programs, which offer drinkers a way of safely returning home

free of charge, are effective. Yet few municipalities have instituted these means of transportation for their citizens. Perhaps this has been due to increasing trends of suburbanization in many areas across the nation which make safe ride programs and free taxi services susceptible to cost ineffectiveness. Even when such programs are present, they do not fully meet the original expectations of citizens. An earlier study found that chosen designated drivers were not abstaining from all alcoholic beverages in over 90% of surveyed cases (Sarkar, Andreas, De Faria, 2005). Simply calling one's self a designated driver does not suffice in terms of road safety. Organizations such as Mothers Against Drunk Driving (MADD) and Students Against Drunk Driving (SADD) have also been formed in order to lessen the number of drunk drivers while filling the latent function of informing the public of the seriousness of drunk driving. In spite of these efforts, the DUI problem remains. Essentially, public policy, laws, and organizational efforts have only explored ways of dealing with the drunk driving problem on the surface. In order to effectively lessen the negative impacts of drinking and driving, the social factors which produce consistently high rates of drinking and driving among certain populations should be examined.

The majority of efforts aimed at lessening DUI incidences focus on the utilization of scare tactics. Law makers and those in charge of creating public policies understand that the drinking and driving phenomenon cannot be completely stopped. What is of concern are the ways of lessening and containing the problem. Unfortunately, the bulk of programs aimed at reducing DUI rates have lacked the proper focus related to the deeper social issues which contribute to increased incidences of drinking and driving. In response to the American DUI problem, great strides have been made in the past 15-20

years to reform public policy in the hopes of minimizing accidents and fatalities associated with drunk driving. However, the statistics show that these efforts have not proven fully successful. Recently, a number of public service television commercials have focused on deterring drinking and driving. Public service announcements (PSA's) have primarily been focused on limiting the number of intoxicated drivers on the road through the use of scare tactics and restrictive measures. These include jail time, loss of respect in the community, and injury to the drunk driver, other drivers, or pedestrians. Many times these commercials depict intoxicated drivers being placed in handcuffs or sitting in the back of a police car. Fear and threat stand out as the most prominent of all variables associate with attempts to advocate citizenry about drunk driving (Outwin, 1987). Catchy phrases such as the most recent, "Over the limit, under arrest," campaign attempt to indoctrinate the public with the idea if you drive under the influence, you will be arrested. Although these campaigns bring the DUI problem into the public eye, inherently, they are problematic because they focus only on unwanted legal ramifications associated with the typical DUI traffic stop.

If increasing the awareness of punishments related to drinking and driving were effective, DUI rates would be expected to decrease markedly with these efforts. This has not been the case. Although the statistics show an overall marked reduction in the rates of alcohol-related traffic deaths since the early 1980's, there has been little reduction since the mid-1990's, and alcohol-related traffic deaths have seen a slight increase in subsequent years. (Hingson, Heeren, and Winter, 1999). Clearly, the majority of anti-drinking and driving campaigns have fallen short of their goals. Apparently, the PSA's have not been as effective as some legislators hoped. Simply put, Americans will always

engage in the legal practice of drinking alcohol. Clearly not everyone who drinks alcohol will end up behind the wheel, though many do. When they do, the legal practice of drinking quickly becomes an illegal act of drinking and driving.¹

It will be highly unlikely that most drinkers will always be able to successfully locate a designated driver in every drinking scenario. The difficulty of locating a designated sober driver becomes even more apparent in rural communities where public transportation or taxi services are either scarce or nonexistent. This should be considered within the context of the increase in vehicle ownership and presence of public roads throughout the country. According to Jacobs (1989), there are more registered vehicles (171,690,733) and more miles of roadway (3,861,934) in the United States than any other nation. This statistic was reported in 1989, almost 20 years ago. We can assume that due to the steady population growth in the United States that both of these numbers have increased drastically, thereby contributing to more incidences of DUI.

Although some areas present higher rates of DUI arrests than others, no state is entirely immune to the DUI problem. The purpose of this study will be to determine why certain counties in the state of Alabama possess higher rates of DUI arrests than others. According to the National Traffic Highway Safety Association (NTHSA), in 2006, 1,208 people died in traffic related incidents on Alabama roads. Of this total, 475 involved alcohol. Thus, 37% of all vehicular crashes resulting in death were alcohol related. This is slightly below the United States average of 41%. Of particular interest in this study is

¹ It should be noted that the term, "alcohol related crash" does not necessarily denote intoxication of an individual operating a motor vehicle. For instance, if a pedestrian or bicyclist is under the influence of alcohol and is involved in an incident with a vehicle, the situation is still considered alcohol related.

the location of the alcohol related crash incidences. The Alabama Department of Public Safety publishes statistics regarding motor vehicle accidents in the state on a variety of variables. One such variable is the geographic locale of each accident. The proportion of accidents that occurred in “open country” areas is staggering. Of the 1,208 total fatal automobile accidents, 846 (70%) took place in these open country areas (Jacobs, 1989). Alabama has quite an expanse of rural areas, especially in the western portion of the state. Conversely, there are a number of metropolitan areas throughout the state. These include Montgomery, Birmingham, Huntsville and Mobile. With DUI rates at an alarming level, each state should examine their particular rates in terms of the urban and rural nature of their counties along with the wet or dry status of each county. Only then can an educated and concerted effort to address the shortcomings of DUI legislation and reduction programs be effective. Furthermore, if DUI is such a problematic occurrence in the U.S, it will be prudent for towns and cities across the nation to adopt safe means of transportation for those who choose to drink. What must be kept in mind is that no single effort aimed at lessening the negative impacts of drinking and driving will provide a “cure all.” Voas, Holder and Gruenewald (1997) found that to increase the public’s perceived risk of DUI arrest and subsequently to decrease drinking and driving, increased DUI media coverage, additional law enforcement officer hours, increased officer training, increased use of breathalyzer equipment, and more DUI checkpoints were all useful.

The existing literature on alcohol abuse and DUI is extensive in some areas, yet lacking in others. Much attention has been given to issues concerning underage drinking, binge drinking, effectiveness of anti-drinking and driving programs and rehabilitation efforts, and their effects on percentages of DUI incidence. Conversely, very little work

has been done with respect to the discrepancies in rates of DUI arrest between urban and rural areas. With increasing suburban areas on the periphery of cities, average drive time for many citizens has increased. Accordingly, safe modes of transportation for citizens living in these areas will become more important than ever before. The way United States citizens live their lives would not be possible without the widespread use of the automobile. Almost every facet of our day to day activities is affected by private vehicle usage (Ross, 1992). It follows that as larger portions of the population succumb to suburbanization, their travel distances will increase. Accordingly, the distance traversed on the roadways by those under the influence will also increase. In order to alleviate the DUI problem in our country, legislators, law enforcement agents, and community activists should shift their focus beyond merely punishing drunk drivers. Rather, an understanding of the social context in which DUI occurs most frequently will be of utmost importance in lessening alcohol related fatalities. Although drinking and driving is obviously a multi-faceted problem, the examination of specific variables which produce persistently high rates of DUI should be deemed worthwhile. Ideally, the following study will shed light on the DUI problem as a whole by focusing on factors (rural vs. urban nature of counties and wet/dry status) common to municipalities in locations across the country.

For the purposes of this study, the degree to which a locality is considered rural is of the utmost relevance in predicting drunk driving incidence. According to the 2004 World Health Organization's annual Health Report, in 2001, 23% of the United States population lived in rural areas. Accordingly, substantial attention should be paid to individuals living in these parts of the country. The further an individual has to drive,

drunk or sober, the more likely they are to be involved in a vehicular accident. This factor is then combined with the ease of access to alcoholic beverages in the surrounding area in terms of the legal status of alcohol within a county a city or town is located. In a wet county, alcohol is sold in numerous locations. In dry counties, no alcohol is sold whatsoever. As such, individuals living in dry counties are forced to travel further in order to acquire and consume alcoholic beverages. In some cases, the dry county citizen will have to drive substantial distances to neighboring counties to purchase alcohol. This may even entail crossing the state line in certain instances. Frequently, this situation will be exacerbated if a highly rural county is also dry.

CHAPTER 2
LITERATURE REVIEW
Legality of Alcohol Sales

A major consideration with this thesis is the legal availability of alcohol in any given county. The distinction is frequently made between “wet”, “dry”, and “damp” counties. A clarification of these terms must be made in order to better understand the impact they may have on alcohol availability and subsequently, DUI arrests. A wet county allows the sale of alcoholic beverages at many different retail establishments within the county lines. Bars, restaurants and packaged liquor stores can all legally sell alcohol, as can grocery and convenience stores. A dry county, on the other hand, prohibits the sale of all alcohol in any form inside the county lines. Finally, there is what is known as a “damp” county. When a county is dry but allows the sale of alcohol in a city within its boundaries, the county is considered damp. The idea of a wet city inside of a dry county may be foreign to those who have not been in such an area. Certain stipulations exist regarding the sale of alcohol in wet cities within dry counties. Normally, this means that an individual can purchase alcohol at a restaurant, bar, or club, but alcohol is not available at grocery or liquor stores for transport. More specifically, this means that convenience stores, grocery stores, and wholesale retailers cannot sell alcohol. However, in some cases, the opposite may be true. Liquor stores may be operating in damp cities where alcohol can be purchased for transport and consumption at

a later time and place, but, bars and clubs may be non-existent and restaurants may be prohibited from serving alcohol. It is important to note the wet, dry, or damp status of each county in order to better understand purchase and consumption patterns that may lead to increased rates of DUI arrest.

Despite the presence of wet cities within some of the dry counties, many individuals must still traverse relatively long distances in order to acquire alcohol. According to Powers and Wilson (2004), dry county residents are not afforded the convenience of proximity to a readily available supply of alcohol. Sometimes this means dry county residents must drive out of the county to find the nearest establishment that sells alcohol. At times this means a travel distance that may exceed 50 miles. For instance, someone living in the southeast corner of Morgan county, Alabama would have to travel across the majority of the county to reach Decatur to purchase alcohol. Another option would be to cross the county line and enter the nearest wet county, Madison, or visit one of the two wet cities in Marshall county, Albertville or Guntersville. In either situation, an inebriated driver will be forced to drive a substantial distance back home after consuming alcohol in the nearest wet city or county. Instances such as these may contribute to higher DUI arrest rates.

A primary consideration when examining the frequency of DUI arrests deals with the ease of access to alcohol. More specifically, how does living in a wet, dry, or damp county affect one's ability to obtain alcohol and the likelihood of drinking and driving? Intuitively, it would be expected that those with the greatest access to alcoholic beverages (those living in wet counties) would be most likely to drink and drive. The easier it is to acquire alcohol the more often one will consume it. Greater alcohol consumption may

lead to increased instances of drunkenness and subsequently, drunk driving. Some assert that reductions in drinking and driving can also be accomplished by lowering the access to alcohol. This can be done in a variety of ways including raising the price of alcohol through increased taxes, restricting both alcohol outlet density and hours of operation, maintaining State control of alcohol sales, and the implementation of laws which restrict alcohol sales to minors (Kenkel and Manning, 1996). The focus here is the restriction of alcohol outlet density. Specifically, how many businesses exist in a given area that sell or serve alcoholic beverages? The literature regarding that question is conflicting at best. Access or inaccessibility of alcohol may have profound effects in terms of the DUI arrest rate. Many studies examining this issue focus on the impact of legal status of alcohol on alcohol related accidents (Powers and Wilson 2004; Winn and Giacomassi, 1993; Shnelle et, al., 1975; Schulte et al., 2003). Some hold that a county's legal alcohol status is a crucial factor in the incidence of alcohol related accidents while others find no correlation.

Schulte et al. (2003) examined the characteristics of alcohol-related crashes in wet versus dry counties in the state of Kentucky. This study incorporated the location of the driver's residence as an independent variable with respect to incidence of alcohol crashes. The ZIP code of the individual's home address was used to determine if the crash victim resided in an urban or rural county within the state. Analysis of the crash data in Kentucky revealed that approximately the same percentage of crashes which occur in wet and dry counties are alcohol-related. Yet, a higher proportion of dry counties residents are involved in alcohol related crashes. One explanation for this is that dry county residents must drive further in order to consume alcohol, further supporting the notion

that decreased alcohol access leads to higher rates of DUI. Additionally, crashes involving dry county residents occurred further away from the individual's home than in cases where wet county residents were involved in alcohol-related crashes. Shulte and his colleagues also reported that residents from dry counties that do not border wet counties have alcohol-related crashes farther from home than the border county residents. This is indicative of the nearness of establishments that serve alcohol to residents in wet counties. This study clearly shows that dry county status can be positively correlated with alcohol-related crash incidence. Other studies have produced different results with respect to alcohol availability and alcohol related accidents and fatalities

Schnelle et al. (1975) found, in a 25 month time series analysis, that the legalization of liquor had no effect on rates of motor vehicle accidents, drunk driving arrests, or arrests for public drunkenness. This study analyzed the wet/dry status of counties in Tennessee. According to the Distilled Spirits Industry (1983) about one quarter of the state's population resides in dry counties. This study analyzed 4 counties that prohibited the sale of alcoholic beverages and measured the effects of such laws. Legislation came about that gave counties the opportunity to alter their laws concerning the legality of alcohol sale. Three of the cities changed their liquor laws in such a way that prohibition of alcohol no longer existed while the fourth city remained completely dry. It would then be expected that those counties that began to allow the sale of alcohol would report increased percentages of alcohol related vehicular accidents. However, this hypothesis was not supported. No significant change took place in alcohol related accidents after the dry county status was lifted. These findings are supported by Winn

and Giacomassi's findings in Kentucky. Increased availability of alcohol does not necessarily prompt increases in alcohol related fatalities.

Other studies focus on the impact of wet or dry status on automobile fatalities where alcohol is involved (Berman, Hull and May 2000; Winn 1993; Cherpitel 1996; Winn and Giacomassi 1993). Some studies show correlation between wet counties and alcohol related fatality rates while others show a correlation between dry counties and alcohol related fatality rates. Finally, there is evidence that no correlation exists between wet or dry county status and alcohol related fatality rates.

Berman, Hull, and May (2000) contribute to the body of literature concerning wet/dry status and alcohol related deaths. They examined the death rates between wet, dry, and damp areas in Alaska to determine what kinds of differences existed among Native Alaskan populations. Their findings were as follows: More restrictive measures (dry) appear to have no effect on suicide rates, while less restrictive control measures (damp) do not affect homicide rates. Accident and homicide death rates fall by 27 and 21 per 100,000, respectively, in the group of communities going dry. In communities going damp, accident and suicide death rates fall by 74 and 56 per 100,000, respectively. The decline in overall injury death rates appears much greater in the group of communities selecting less restrictive options: 127 compared to 48 per 100,000. However, death rates were higher in these communities while they were wet, with the discrepancy statistically significant for suicides. Although suicide and homicide rates are not related to DUI, areas where more instances of alcohol related crime is reported reveals the importance legal status of alcohol status may have. The authors concluded that community-based alcohol control under the Alaska local option law has likely had some effect in

moderating the elevated risk of injury death for Alaska Natives living in small remote communities.

Other studies have reported still different results in terms of alcohol availability and the incidence of alcohol related fatalities. That is, that dry counties possess higher rates of alcohol related fatalities. An example of this conflicting literature is evidenced by Winn and Giacomassi (1993) in a Tennessee study of 37 cities with populations over 10,000 citizens. This study found that alcohol-related fatalities and homicide were higher in cities located within dry counties. This finding is consistent with the idea that increasingly repressive measures essentially force rural citizens to travel much farther in order to obtain, and consume alcoholic beverages. As such, these individuals must then drive further in order to return home. In this case, if alcohol is prohibited, some individuals will make it even more of a point to obtain these types of beverages. When this mindset is accompanied by long traveling distances, it creates a recipe for disaster.

In addition to Winn and Giacomassi's Tennessee study, other literature exists that is similar in nature. Cherpitel (1996) studied two counties, one wet and one dry, in order to determine if any significant differences existed between these types of communities. The dry county was Hinds County, Mississippi while the wet county was ContraCosta County, California. The study examined the prevalence of unnatural causes of death where alcohol was present. These included homicide, suicide, motor vehicle accidents, other accidents and undetermined causes. Hinds County had over twice the rate of fatalities from unnatural causes to that of ContraCosta County. The data were collected from county coroners in each location. There was some speculation that these differences reflected differences in racial compositions of the counties or drinking habits of the

residents. Those dying from unnatural causes in Hinds County were largely black, not surprising in an area of the country known as the “Black Belt” where large numbers of African Americans live. Furthermore, alcohol prohibition in this area is not rare. In fact, 44% of the counties in Mississippi are dry. Conversely, California has a much lower number of dry counties. This fact may provide support for the correlation between dry counties and alcohol related fatalities.

A number of studies show that alcohol availability is irrelevant to the incidence of negative effects normally associated with consumption. One such study was conducted by Winn and Giacomassi (1993), who looked at the wet and dry status of each county in Kentucky. They were interested in examining the effects that wet/dry county status had on “alcohol problems,” one of which was alcohol related fatalities. Alcohol related fatalities cover a broad spectrum of phenomenon, one of which includes alcohol related traffic fatalities. A primary outcome of the study demonstrated that dry counties had higher rates of fatal accidents than did wet counties. In this study, the 120 counties in Kentucky, 77 of which are dry, were analyzed in terms of wet and dry status and the resulting numbers of traffic accidents attributed to alcohol. The independent variable was the availability of alcohol while the incidence of alcohol related traffic accidents was the dependent variable. Winn and Giacomassi found that there were no significant differences between dry and wet counties on fatal accidents, although dry counties had a lower rate than wet counties. There were statistically significant differences between the two types of counties on both alcohol-related injury and alcohol-related property accidents, with dry counties having lower rates.

Finally, there are a handful of studies that focus on DUI arrests and the availability of alcohol (Powers and Wilson 2004). A study concerning the importance of wet vs. dry county status and DUI arrests took place in Arkansas. The state of Arkansas was chosen by the researchers for two important reasons. First, slightly more than half of the counties in Arkansas are dry. This factor alone could potentially uncover important trends in the DUI arrest rate. Secondly, at the time of the study, Arkansas was growing faster than the national average which may bring about alterations in alcohol consumption and regulation. Citizens of certain municipalities across the country have the ability to vote their county wet or dry. All 75 counties in Arkansas were used in the study. Of these, 32 were classified as wet and 43 are dry. Powers and Wilson (2004) report that the DUI arrest rate is significantly higher in wet counties and is also highly related to the number of officers and the per-officer-arrest rate in each county. It was also found that the county demographic variables (percent 20-34 years of age, percent poor, percent non-White, rural) are not significantly associated with the DUI arrest rate. It is clear then that previous studies of DUI incidence have produced conflicting accounts when examined in different areas of the country.

Population Density

The DUI arrest rate cannot be attributed to the legal status of alcohol alone. Another factor which is in need of attention in this discussion is population density. According to Jacobs (1989) two-thirds of all traffic fatalities occur in rural areas. This does not necessarily denote the involvement of alcohol but it can be assumed that a significant portion of this number does encompass alcohol related traffic fatalities. A

number of factors are at work with respect to population density and the rate of DUI arrests in a county. The structure and organization of communities within each county heavily influences DUI arrest likelihood. As such, an individual's residence in urban vs. rural counties must be considered. Urban and rural distinctions are often made by a "persons per square mile" estimate. Other times, areas are given an urban or rural status based on whether or not they fit the criteria to be considered a metropolitan or micropolitan statistical area. A metropolitan area is defined as a location having a population equal to or greater than 50,000 citizens. A micropolitan location contains an urban core of at least 10,000 people but no greater than a 50,000 population. These measures can be misleading. A highly rural or suburban area may sit at the edge of a metropolitan area and lead to inflated DUI rates. The area in question may technically be considered urban, while its nature is truly more rural. Therefore, it may be difficult to ascertain a completely accurate designation of urban and rural areas.

Information supporting the idea of increased susceptibility to DUI incidence is evidenced by considering the rural and urban nature of states in the United States (Barnes and Welte 1988; FBI 2005; Fletcher and Skinner 2006; Williams 2006). According to the NHTSA, in 2005, Montana reported the highest percentage of vehicular related alcohol fatalities. It should also be noted that Montana is one of America's least densely populated states. Williams (2006) provides more support for this phenomenon in a study done concerning impaired driving consequences in the United States from 1982-2003. The study looked at the percentages of alcohol related crashes with individuals possessing blood alcohol concentrations higher than 0.08% by state. The top 3 states in 1982, Montana, North Dakota, and South Dakota remained atop this list in the 2003

study. It is likely that these rates can be attributed to the lack of available public transportation systems in cities due to the highly rural nature of the state. The study does not take into account the wet/dry status of each county in these states, yet it does give the perception that rural locations may lead to increased levels of drinking and driving.

Further studies have been done concerning rural residents and problems relating to alcohol. Fletcher and Skinner (2006) found that rural college students were more likely to drink at outdoor parties or in their vehicle during their first experience with alcohol than were urban students. No significant differences were found between residential background and drinking motives, knowledge or negative consequences concerning alcohol. However, the attitudes, beliefs and experiences with alcohol among those students living in rural areas differ from students residing in urban locations. Rural university students are aware of the illegality associated with carrying open containers in vehicles. The argument could be made that their rural upbringing placed them in situations where violation of the open container law was more prevalent in terms of increased driving distances to drinking locations.

Barnes and Welte (1988) conducted a study of New York high school students concerning drunk driving. They found 11 percent of those in the city admitting drunk (or drugged) driving in the pervious year, compared with 28 percent in the suburbs and 29 percent upstate. Clearly, there is an association between location and drunk driving. Those living in the city may not need a vehicle and thus do not own one. Therefore, the chances of an urban youth being involved in a drinking and driving situation will likely be much lower than that of a suburban youth. Very few individuals living in the core of New York City do not own vehicles. Yet, even if they did own vehicles, New York City

has a vast system of public transportation which will serve to enable those who do drink to travel home without driving. The availability, or lack thereof, of public transportation is a common theme in the rural vs. urban discussion as it relates to alcohol related crashes. It is clear that, given Americans reliance on the automobile as a primary means of transportation, rural and urban location should be explored as a significant factor in every DUI discussion.

FBI arrest data for DUI are also pertinent in this discussion of urban-rural differences. According to 2005 data, the less populated an area, the higher the DUI rate. Cities with larger populations possess lower rates of DUI arrests. The data are organized in a table which is divided into 6 categories based on the population characteristics of cities and towns in the United States. Group 1 represents 250,000+; group 2 100,000 – 249,000; group 3 50,000 – 99,000; group 4 25,000 – 49,999; group 5 10,000 – 24,999; and group 6 <10,000 people. Additionally, there are 3 other categories. These are metro counties, non-metro counties, and suburban areas. Although those data are indicative of the United States as a whole, it can be hypothesized that there will be similar trends in individual states, including Alabama.

It is expected that the more rural a county, the higher the rate of DUI arrest. Additionally, the “drier” a county is in terms of distance to the nearest wet county, the higher the rate of DUI arrest. The urban and rural nature of Alabama counties can be identified by the number of persons per square mile. This statistic is derived from the 2005 Census Bureau data. In the U.S., a municipality is considered rural if it has fewer than 2,500 inhabitants. Subsequently, areas with small populations possess fewer bars,

restaurants, and other locations that typically sell alcohol. Individuals living in these areas will be forced to travel further to drinking establishments.

A final contributing factor to be addressed when examining DUI rates in rural vs. urban areas are the general rates of crime in these locations (Rephann 1999; Warner 1982). Moreover, which crimes occur with the greatest frequency in rural areas? Rephann (1999) reported that crime rates are always highest in metropolitan areas for individual offense categories. However, there are crimes for which the arrest rate is highest in non-metropolitan areas. This means that although drinking and driving may occur more frequently in urban areas, the arrests for the crime are made more frequently in rural areas. These crimes include ones that have been identified in the literature as being particularly “rural” in nature. These offenses include domestic abuse, fraud, manslaughter, and driving under the influence. Warner (1982) supports this position by mentioning that driving under the influence is among one of the offenses that typically occur in rural areas. Therefore, due to the existence of this literature, there is the possibility that law enforcement agents are more cognizant of drinking and driving. If officers presume that rural inhabitants frequently drink and drive, they may step up their enforcement of this law in rural areas, thus increasing the DUI arrest rate for these specific locations.

DUI: At Risk Populations

Finally a great deal of importance in the DUI discussion should be given to demographic categories that contribute to higher DUI percentages. Much like other facets of social science research, DUI arrest statistics indicate that individuals with

certain social characteristics are more prone to a DUI arrest than others. Researchers identify individuals who consistently have a higher propensity to drive under the influence of alcohol as “high risk”. A number of demographic factors have been proposed as crucial to understanding why certain members of a population engage in drinking and driving more frequently than others. Many studies concerning DUI have focused on racial composition as a primary factor (Caetano and McGrath 2005; Caviola and Wuth 2002; Hague 1988; Hunter, Wong, Beighley, and Morral 2006).

Caetano and McGrath (2005) reported that, in the year 2000, 37% of Blacks, 38% of Hispanics, 29% of Whites, 44% of Native Americans/Alaskan Natives, 39% of Native Hawaiians/Pacific Islanders, 22% of Asians and 28% of those of Mixed race reported committing DUI in the past year are alcohol abusers or dependent. All others caught driving under the influence were not alcoholics. From these statistics, it is clear that certain races and ethnicities in the U.S. represent larger shares of alcoholism percentage, and subsequently, higher DUI percentages than others. The previously mentioned idea that DUI affects everyone to the same extent is a misnomer. Indeed, no race is immune to the incidence of drinking and driving, yet some are more prone to arrest than others. Additional research must be taken into account in order to establish reasoning for the discrepancies in these percentages.

Other research (Cavaiola and Wuth, 2002) has identified multiple social characteristics including sex, age and social class to increasing DUI rates. They found that male Hispanics, twenty-one to thirty-five years old, Black males, thirty to forty years old and of lower socioeconomic status, and Native Americans of low socioeconomic

status in rural areas all present above average rates of DUI arrests. These groups have been deemed “high risk.”

According to Hunter et al. (2006), Hispanics in the United States are particularly vulnerable to driving while intoxicated with alcohol. Their study focused on the degree of acculturation among Hispanics residing in Los Angeles county California. The crux of the study was that individuals of Hispanic descent who were less acculturated received a larger share of 2nd and 3rd DUI offenses. Acculturation is a process by which individuals learn the norms of a society. In this case, many Hispanics are not ascribing to the widely accepted American ideal that driving while intoxicated is inappropriate. They found that less-acculturated Hispanic DUI offenders are more likely to report conviction for a new DUI offense, after taking into account other relevant risk factors such as age, marital status, education, and drinking severity. Despite the legal sanctions levied against Hispanics, those who have yet to internalize and associate drinking and driving as negative will be far more likely to continue this practice. If public safety agencies hope to decrease drinking and driving incidence, the identification of racial groups that most frequently engage in such behavior deserves increased attention. However, it should not be concluded that race is the only factor at work here.

A discussion of the factors associated with drinking and driving is not complete without mention of chronic alcohol abuse. There are two positions on the role of alcoholism on DUI's. On the one hand, many DUI related studies have focused on alcoholics as extremely problematic in terms of causing higher percentages of alcohol-related crashes (Caetano and McGrath 2005; Geller and Lehman 1983; Jacobs 1989). Simply put, the more often an individual is drunk, the more likely he or she is to drink

and drive. In many cases even if county laws make alcohol more difficult to obtain, heavy drinkers are willing to incur the extra trouble and extra costs required to maintain their consumption rather than reduce it. When we couple the willingness of alcoholics to procure alcohol with the factors of sparsely populated communities and or the presence of a dry county, it should be expected that alcoholism has a fairly significant impact on DUI rates.

It has been suggested that rates of alcoholism are higher in rural areas than in urban locations. If rural areas possess significantly higher rates of alcoholism than do urban areas, then perhaps alcohol addiction is the driving force behind discrepancies in DUI incidence rather than driving distance or ease of access to alcohol. Borders and Booth (2007) report that the odds of abstinence and, among drinkers, the odds of a current alcohol disorder and exceeding daily limits were higher in rural than suburban areas.

Geller and Lehman (1988) estimated that about 30 to 50 percent of the drinking drivers are alcoholics. This is a fairly substantial portion of the drinking and driving population. However, previously it was thought that alcoholics were primarily responsible for the high DUI rates due to the excess in which they engaged in drunk driving behavior. Some now believe this is a misconception. The argument can be made that because alcoholics drink and drive with more frequency than non-alcoholics, the alcoholic's ability to manage their behavior while under the influence will likely be better. Alcoholics and alcohol abusers are much more frequently intoxicated than light and moderate drinkers. As such, they will drive under the influence much more often. They will be more accustomed to carrying out daily activities, including driving, with

significant amounts of alcohol in their system. Individuals with less experience with alcohol are thought to be at the greatest risk of receiving a DUI. Hence, they are often viewed as threat to others on the road. It stands to reason that this would hold true. Individuals who do not drink regularly will not build up the same tolerance for alcohol as those who drink everyday. As such, they will have little experience driving under the influence. The combination of these factors makes the occasional or social drinker increasingly susceptible to both DUI arrests and alcohol related crashes.

Finally, there is also evidence that DUI recidivism is a primary contributor to the DUI problem (Caviola and Wuth 2006; Fell 1995; Hunter, Wong, Beighley and Morral 2006). More specifically, upon conviction of their first DUI arrest, the alcoholic will be more prone to engage in drunk driving than the occasional or social drinker who is not addicted to alcohol. Fell (1995) found that repeat offenders are over-represented in traffic accidents with 1 out of 8 intoxicated drivers involved in fatal crashes having had a Driving While Intoxicated citation within 3 years prior to the crash. Caviola and Wuth (2006) studied 77 first time DWI offenders who received their citation between 1990 and 1992. Members of his study were chosen randomly from a population of approximately 2,000 first time DWI offenders in Monmouth county, New Jersey. The results of this study were that 29 (38%) of the first time DWI offenders were again arrested for DUI following the study.

Hypotheses

On the basis of the existing literature, I hypothesize that Alabama counties with lower population densities (more rural areas) will possess the highest rates of DUI arrests.

Due to the scattered location of homes and businesses, citizens in these areas will be forced to travel longer distances while under the influence of alcohol. If people must drive further to return home after becoming inebriated, their chances of being arrested for DUI increase. Moreover, the lack of public transportation in sparsely populated counties does not offer inhabitants any means of travel other than their own vehicles. Typically, no subway systems, busses or cab companies operate in rural areas. Conversely, the widespread use of public transportation in urban locations with high population densities will also lead to reduced DUI arrests in these areas. Areas with higher population densities also have clusters of businesses (including those that sell alcohol) and residences in close proximity to one another. This too will lessen the amount of time spent driving under the influence for the urban dweller.

Second, I hypothesize that dry counties will have higher rates of DUI arrest than wet counties. There are two factors to consider here. First, the buying of packaged liquor for later consumption must be addressed. Next, drinking at a business establishment that serves alcohol needs to be examined. If rural inhabitants must travel great lengths to acquire alcohol, they will be more likely to buy large quantities on each trip so that frequent trips can be avoided. This can be problematic in terms of DUI. Previous research by Scribner, Mackinnon, and Dwyer (1994), has shown that when more alcohol is available in the home, more will be consumed on one drinking occasion rather than saved for later use. This may lead to higher instances of drunkenness, and subsequently, increased incidence of drunk driving for the dry county resident. Moreover, dry county residents will be required to travel into a neighboring county to

visit a bar or restaurant that serves alcohol. Once inebriated, they must cross back over to their home county. This extra travel time could lead to higher instances of DUI arrest.

On the contrary, wet county residents will have ample and convenient access to alcohol which could translate to smaller purchases of alcohol, less consumption, and thus, fewer instances of drunk driving. Even if wet county residents must drive to obtain and consume alcohol, their trip distance will be much shorter. This equates to a lessened risk of DUI arrest. Essentially, dry counties and low population densities are linked. The counties in Alabama that are dry or damp are also more rural. As such, the researcher has the expectation that DUI arrest rates will be greater in Alabama counties that are both dry and highly rural.

CHAPTER 3
METHODOLOGY
Data and Method

The purpose of this study is to examine the relationship between DUI incidence and (1) the legal status of alcohol in a county; and (2) the population density of counties in Alabama. The data in this study were obtained from the U.S. Census Bureau, the Alabama Criminal Justice Information Center (ACJIC), the FBI Uniform Crime Report (UCR), and the Alabama Alcoholic Beverage Commission Board. Data come from 65 of the 67 counties in the state. Data for DUI arrests for Choctaw and Dallas counties were not available for 2006. The exclusion of Choctaw and Dallas counties should not significantly alter the outcome of the study. Both of these counties are wet. Given the disparities already existing in the data between wet and dry counties (there are far more wet counties than dry) the exclusion of these two counties will not significantly change the results.

Dependent Variable

Incidence of DUI will be measured as the single dependent variable. Raw numbers of DUI arrests for each county, as well as the percentage of all DUI arrests in Alabama were available from the ACJIC for 2006 year. A DUI rate was calculated for each county. This was achieved by dividing the raw number of DUI arrests in each

county by the population of each county. The ACJIC did not have county level DUI statistics readily available on their website. However, the researcher was able to contact the organization via e-mail and request the compilation of this DUI data. The data sent by the ACJIC are included in Table 4.

Independent Variables

For the purposes of this study, two primary independent variables, legal status of alcohol in a counties, and population density will be utilized. The Alabama Beverage Control Board provides information pertaining to which counties are wet, dry, and damp. This map is included in Appendix A. Dry counties are defined as those that do not sell any alcohol within the boundaries of the county. This includes beer, wine, and spirits. In Alabama, 26 of the 67 counties are officially defined as dry. However, this statistic is not completely telling with respect to alcohol sales, as 12 of the 26 dry counties have wet cities within the county lines. Although the sale of alcohol is prohibited inside the county lines, certain cities are wet, meaning that alcohol can be sold under certain circumstances within city limits. These “damp” counties represent a methodological problem with respect to coding. Damp counties are those that are considered dry yet have one or more cities within them that serve alcohol. There are a total of 16 wet cities in the dry counties. For the purposes of this study, these counties will be considered wet if the wet city is the largest city in the county. A total of 10 cities in Alabama fit those criteria. They are: Enterprise in Coffee county, Monroeville in Monroe county, Jackson in Clarke county, Clanton in Chilton county, Jasper in Walker county, Ft. Payne in De Kalb county, Albertville in Marshall county, Decatur in Morgan county, Scottsboro in Jackson county,

and Florence in Lauderdale county. Accordingly, a total of 14 counties will be considered dry while the remaining 51 counties are wet. By adjusting for these large cities in damp counties, a more accurate measure of the wet or dry nature of the counties is represented. Dry counties are coded as 0 while wet counties are coded a 1.

Next, the population density for each of the included 65 counties was considered so a measure of the county's urban or rural nature could be identified. The U.S. Census Bureau American Fact Finder was used to obtain these data. The density of each county is measured by the number of inhabitants per square mile of land area. Simply identifying each county with an urban or rural status and coding them as such initially proved insufficient. Some counties are predominantly rural yet one city in the county may be considered metropolitan. Moreover, portions of highly rural counties may have cities included in a larger municipality's metropolitan statistical area. In terms of coding, these areas could be problematic and alter the data in a way not truly indicative of the county's population characteristics. As such, the population density measure seemed to be a more accurate measure for this variable. Population density was analyzed as an interval level variable. Therefore, there is no absolute value at which a county is labeled urban or rural. The greater the density value, the more urban an area is considered. Conversely, lower density values are indicative of rural counties. In order to adjust for skewness, the logarithm was of each density value was taken. The variable "DENSITYLOG" was used in the statistical analysis.

Control Variables

A number of demographic control variables were included in the examination of DUI rates. Due to Alabama's location in the heart of what is known as "The Black Belt" of the United States, the racial composition of each county must be considered, specifically, the percent black. Certain counties in the state have significantly higher percentages of African Americans than others. As such, the percent black in each county will be a necessary measure to ensure an accurate measure of DUI. Sixteen of the 65 counties examined in this study have percentages of black citizens at or above 40%. Combined, all 16 of the Black Belt counties comprised approximately 26.4% of the total Alabama population. However, these counties were only responsible for 16.6% of the DUI arrest rate in the state. A body of literature dealing with the racial profiling of blacks exists. Racial profiling generally targets Black American men and women more than other races in a phenomenon known as "driving while black" (Harris, 1997; Meeks, 2000; Pampel, 2004). In the context of DUI, racial profiling could become an important consideration. The percentage of individuals actually caught and arrested for driving under the influence is far lower than the actual number that typically engage in this behavior. However, if blacks are pulled over with greater frequency than other races, due to racial profiling, it stands to reason that they will have larger shares of DUI arrests. The lower percentage for DUI arrests in black belt counties would suggest that racial profiling may not be a factor in DUI arrests in Alabama. Nevertheless, we do examine the potential impact of race, and data for the percent black in each county are obtained from the U.S. 2000 Census. An interval level measure was utilized to account for the percent of black individuals in each county.

In accordance with the aforementioned literature concerning automobile usage patterns, the proportion of residents living in poverty in each county will be considered. This variable is important since most individuals living at or below the poverty line have limited access to automobiles than those who are more affluent, and thus have a decreased likelihood of receiving a DUI. The percentage of individuals in each county living at or below the poverty level was analyzed as an interval level variable. These data were collected from the U.S. 2000 Census.

Age and gender composition will be controlled for as well. The DUI literature points to individuals age 20-34 as the most frequently cited drunk drivers. Geller and Lehman have found an important turning point in terms of age and DUI. They found that an inverse relationship exists when considering driver age and deaths attributed to DUI. As the age of an individual rises, the chances of the individual's involvement in a DUI related accident decrease. After the age of twenty five, this relationship was the strongest. (Geller and Lehman, 1988). The 20-34 age range includes many who are of college age. Significant percentages of college students regularly participate in binge drinking or consuming 5 or more beverages (4 for women) at one time (Brown University, 2007). This practice results in drunkenness for the alcohol consumer more often than the practice of occasional social drinking. As such, it could be expected that college students engaging in binge drinking will be more prone to drinking and driving and thus, being arrested and given a DUI. The percentage of individuals in the 20-34 year old age range was attained from the 2000 U.S. Census. Additionally, men receive a much greater share of DUI's than women. On average, males represent higher percentages of alcohol consumption, instances of drunkenness, and DUI arrests than

women (Hingson and Winter, 2003; Windle, 2003; Yu and Williford, 1993). Therefore, the percentage of males in each county will be a necessary control. These data were also acquired from the 2000 Census.

CHAPTER 4

RESULTS

Univariate Analysis

This study began by providing descriptive statistics for all of the variables in the study. First, the dependent variable (DUI arrest rate), followed by the independent variables (legal status of alcohol, population density) and finally the control variables (percent black, average age, percent male, and percent living in poverty) were compiled in Table 1. Macon County had the minimum value for DUI arrests while Madison County held the maximum value of 1,602 arrests. The average DUI arrest in Alabama counties was 200. Dry counties were coded as 0 while wet were coded with a 1. As previously mentioned, there were a total of 14 dry counties and 51 wet counties used in this study. Wilcox County possessed the lowest population density with a value of 14.8 persons per square mile. Jefferson County had the highest population density value at 595 persons per square mile. The average population density for Alabama counties was 85 persons per square mile. Winston County only had a black resident population of 6% while Macon County had the largest percentage of black residents with an 82.5% value. Shelby County held the lowest percent of citizens living in poverty with a value of only 7%, while Macon County possessed the highest poverty percentage of 30.4%. Finally, 14% of Baldwin County residents were ages 20-34. Lee County possessed the highest percentage of individuals in this age group with a value of 28%. As previously

mentioned, due to the skewness of a number of the variables, their logarithms were taken before performing the analysis in order to account for this problem. Average age, population density and DUI arrest percentage all fit the criterion for change to logarithmic values.

Bivariate Analysis

A correlation matrix was run for the variables to see what, if any, relationships existed (Table 2). A number of variables were correlated with percentage of DUI arrests in each county. Both of the independent variables tested were correlated with the DUI rate. Legal status of alcohol ($r = .275$) was positively correlated with the DUI rate and was significant at the .05 level (.027). This statistic indicates that wet counties possessed higher rates of DUI arrest than dry counties. Population density ($r = .652$) was very highly positively correlated with DUI rate and significant at the .01 level (.000). This statistic indicates that counties with higher population densities have a higher share of DUI arrests than counties with lower population densities. Some of the control variables were also correlated with the DUI rate. The percentage of individuals living in poverty ($r = -.417$) was negatively correlated with DUI rate and significant at the .01 level (.001). This indicates that as the number of individuals living below the poverty line in a county decreases, the DUI arrest rate increases. This relationship was expected due to the lessened automobile access of those living in poverty. Finally, percent black ($r = -.282$) was negatively correlated with DUI rate and was significant at the .05 level (.023). Therefore, as the percent black decreases in a county, the DUI arrest rate increases. Age ($r = .024$) and percent male ($r = .149$) were not significantly correlated with DUI arrest

rate. The significance levels of both variables were age (.850) and percent male (.237). The percent male was probably not correlated due to the uniformity of percentages in every county. For the most part, percentages of males in Alabama counties were all either slightly above or below 50%. No drastic deviations from this trend were apparent. The lack of correlation between age and the DUI arrest rate can also be explained by the small deviation in percentages of individuals ages 20-34. Although the percentages of citizens age 20-34 in Alabama counties ranged from a low of 14% to a high of 28%, the majority of the cases fell in the 18-20% range.

Multivariate Analysis

This study utilized Ordinary Least Squares (OLS) regression to determine the effect both legal status of alcohol and population density had on the DUI arrest rate. The regression model was used to determine the effect each variable had on the DUI rate. The model tested the effects of all the independent variables in a normal linear regression.

I tested the effects for all of the independent variables included in the study. Population density (B = 1.146, p = .000) was the only variable significantly correlated with the DUI arrest rate. These values suggest that as the population density of a county increases, so too does the DUI arrest rate. Legal status of alcohol (B = .642, p = .124), percent black (B = .004, p = .638), male percent (B = .119, p = .135), percentage of individuals living in poverty (B = -.017, p = .676) and average age (B = -.812, p = .467) are not significantly correlated with the DUI arrest rate. The R² valued indicates that,

together, all of the variables accounted for 64.8% (.648) of the variation in the dependent variable DUI arrest rate.

CHAPTER 5

DISCUSSION, LIMITATIONS, AND CONCLUSION

Discussion

The stepwise regression analysis in this study shows mixed results with respect to the original hypothesis. The researcher expected that dry counties would possess higher rates of DUI arrests than wet counties. This did not turn out to be the case. Instead, the data showed the wet counties had higher rates of DUI arrest. In spite of this, the legality of alcohol sales in each county should not be ignored. It could be hypothesized that those living in dry counties are forced to drive long distances into wet counties to acquire alcohol. Individuals who must traverse great distances while under the influence of alcohol increase their chances of being pulled over and arrested for DUI. This may have a significant impact on the rates of DUI arrest for dry county citizens that traverse wet counties in order to return home. The issue here is the county in which an individual gets pulled over. DUI arrest statistics report the county of arrest, not the arrestee's county of residence. Consequently, an individual who is arrested for DUI in a wet county but resides in a neighboring dry county will increase the DUI arrest rate in the wet county rather than the dry. The statistics would then lead researchers to believe that increased driving distance due to lack of alcohol availability in dry counties is not to blame. It is beyond the scope of this study to identify the county residence of each individual DUI arrest in Alabama. In fact, this information may not even be currently available.

The regression analysis also shows that counties with higher population densities had higher rates of DUI arrest. In fact, population density was the most important factor in determining a county's DUI arrest rate. This is contrary to the hypothesis expected by the researcher. Counties with lower population densities are more rural in nature. Intoxicated drivers in rural areas may navigate greater distances on roads which typically receive far less maintenance than roads in urban areas. Furthermore, it may be more difficult for an officer to spot signs of a drunk driver on a crowded city street, highway, or interstate than on a deserted rural county or state road. Therefore, the drunk driver would stand out to a greater extent in less densely populated areas.

DUI roadblocks are sometimes utilized by DUI task forces to get drunk drivers off the road. At DUI roadblocks police officers stop every driver who passes through, much like a border patrol station. Alternate routes branching off from the main road are also blocked off so that drunk drivers are unable to bypass or avoid the DUI checkpoint. The officers at these roadblocks are trained to ask specific questions and look for signs of impairment in each driver as he or she passes through. These roadblocks are often set up on heavily trafficked urban areas or on a route frequented by drivers leaving drinking establishments. This is done in order to prevent the largest amount of potentially dangerous drivers from continuing to drive drunk. As such, these roadblocks are typically set up in areas with a great deal of traffic flow. Specifically, densely populated areas. Moreover, positioning DUI roadblocks in these areas can be lucrative for the county government that oversees the local police force. These roadblocks operate under the guise of a concern for public safety. Yet, in no uncertain terms, DUI arrests can be quite expensive for the accused. These checkpoints act more like an incredibly expensive

tollbooth for intoxicated drivers who approach them. If convicted the cost of the offense can be upwards of \$1,500 depending on the particular nature of the incident. Counties may see DUI arrests as a substantial and reliable source of income due to the frequency and ubiquity of such arrests. As previously mentioned, that practice of drinking and driving will always occur. Police and government officials bank on this and may generate hefty revenues in DUI arrest cases. Naturally, law enforcement officials will be instructed to set up DUI checkpoints in areas where more vehicles pass through in the hopes of making more arrests. As such, this factor could largely contribute to higher rates of DUI arrest in densely populated urban areas.

Limitations

The researcher attempted to account for key factors related to the DUI problem, yet some crucial limitations must be addressed. There are some occurrences that simply cannot be accounted for properly. For instance, citizens of dry counties may travel across county lines into a wet county within the state or cross the Alabama state line into Mississippi, Tennessee or Georgia to acquire alcohol. After purchasing alcohol in these bordering counties or states, the individual will return to their home county. The problem arises in terms of where the DUI offender is pulled over. Law enforcement in urban areas may be greater and more vigilant than in rural areas. It was also noted that many of the wet cities located in dry counties were the largest city in the county. Accordingly, it can be argued that the drunk driver has a greater chance of being pulled over while exiting the wet county or wet city on their way back home. This may affect the rates of DUI arrest in such a way that it may appear as though urban areas have higher rates even

if rural inhabitants are responsible for a significant share of the arrests. Furthermore, those who cross state lines and consume alcohol may be arrested in that state rather than their home state. In those cases the DUI arrest would be counted in one of the three states bordering Alabama.

Also of note is the absence of Choctaw and Dallas counties from the data set. Both counties are wet, as are the majority of counties in Alabama. Therefore, it can be argued that their exclusion did not have a significant effect on the statistical outcomes in researching the effects of wet/dry status. The appendix includes a map detailing the wet or dry status of each county in Alabama. Dallas County is surrounded by 4 other wet counties, Perry, Wilcox, Lowndes and Autauga. Only a small portion of Chilton County, borders Dallas County. Therefore, the argument concerning dry county residents being arrested in wet counties (Chilton County residents arrested in Dallas County) is not likely to hold much importance here. Also since there is a city within Chilton that sells alcohol, residents will be inclined to make their purchases there rather than in Dallas County. Choctaw County is bordered by 2 wet counties (Marengo and Sumter), a dry county (Washington) and a damp county, (Clarke). Again the data available are not inclusive enough to account for citizens of Washington County who may be arrested for DUI in Choctaw County. In order for the study to be as comprehensive as possible, DUI data for all 67 counties would be available. However, this was not possible and beyond the researcher's control in certain situations.

Research Implications

Although the original hypotheses were not supported in this study, further DUI research should be pursued that deals with urban and rural issues. As previously

mentioned, the currently available DUI arrest data do not account for the county in which the DUI offender resides. Rather, the percentages of DUI are reflected in the county in which the arrest took place. In order to generate an accurate measure of which residents (wet or dry county) are committing acts of drunk driving, this information should be included in future studies. If this factor is taken into consideration, a more precise measure of the importance of wet/dry status on DUI rates will be obtained.

Further research concerning DUI in all of the United States should focus on availability of alcohol and population density. States possessing numerous, large metropolitan areas for example, may reveal that the aforementioned factors do not hold as much weight as others. Ultimately, the goal of any study aimed at identifying factors associated with DUI incidence strives to lessen the harmful effects of the activity. Far too often, the DUI problem is generalized. Implementation of a particular program may prove successful in one area but not necessarily in another. No two states will have exactly the same characteristics in terms of alcohol legislation or population distribution. If specific patterns are identified and instituted in states on a case by case basis, perhaps noticeable progress can be made in lowering DUI arrest rates across the country.

The location of DUI arrests should also be considered in terms of their proximity to entertainment districts. More specifically, how many miles from the origin point was the arrest made? Are police setting up boundaries around these areas? If so, once the driver passes through, their chance of receiving a DUI diminishes drastically if the presence of law enforcement agents is markedly decreased beyond a certain point. Essentially, a DUI “gauntlet” may exist in high traffic areas near business establishments that sell alcohol. Specifically, areas with many more officers per citizen or per square

mile will have adequate resources to set up these roadblocks or heavily patrol areas where drinking frequently occurs. Urban areas may have a similar percentage of officers in relation to rural areas. Yet, due to the clustering of drinking establishments in urban areas, a DUI zone can be condensed. This practice is far less feasible and also unnecessary in rural areas with sparse populations and sporadic placement of businesses that sell alcohol.

Additionally, some previous studies focusing on the incidence of DUI have accounted for the number of sworn officers employed by each county. Simply put, the more citizens in a county, the greater number of law enforcement agents are needed. Naturally, increased officer presence will be influential in inflating the percentages of DUI arrests. The number of per capita officers in each county should be examined in order to get a true sense of discrepancies in county level DUI arrest rates. Unfortunately, for the purposes of this study, comprehensive data was not readily available for compiling the numbers of every law enforcement agency in the state of Alabama. Although this study reveals that population density is the most pertinent driving force in explaining DUI rates, the number of officers per capita is related and could explain a great deal of the variance in rates from county to county.

Suburbanization is also worthy of mention when attempting to explain DUI arrest rates. The statistics regarding county level DUI arrest rates will include those living in suburban areas of large cities. However, the true nature of suburban living is not accounted for properly. In a way, suburbs may present similar problems to their residents as those faced by rural inhabitants. After WWII, many white middle and upper middle class individuals began moving away from the inner cities into suburban communities.

This phenomenon was known as “white flight”. As Putnam stated, “...those who live in some metropolitan area, but outside the central city-that is, in the suburbs-have more than doubled from 23 percent in 1950 to 49 percent in 1996” (Putnam, 2000, p.206).

Furthermore, Putnam notes that from 1969-1995 travel distance to both work and leisure activities have increased by nearly 30%. Clearly, outings to bars, clubs and restaurants represent leisure activities. Thus, greater travel distances to these destinations equate to more time spent behind the wheel while intoxicated. This trend still continues to this day. Now, people are moving and living even further away from the center of cities than they did at the pinnacle of the white flight phenomenon. Often, neighborhoods or subdivisions are located many miles from any business establishments. Morris (2005) agrees with this notion by reporting that due to the way American towns and cities are built, people are forced to use cars in every facet of their daily lives. It is clear that Americans possess a culture largely centered on the automobile. Subsequently, this provides for favorable DUI conditions when the layout of the typical American city is considered. The locus of most cities’ entertainment and nightlife districts are centrally located, normally in a downtown area. Thus, those who live in suburban communities on the periphery of a city, are forced to travel lengthy distances to reach these locales. Essentially, a suburban dweller in a highly urban city may be forced to drive an equal or perhaps further distance than a rural dweller to consume alcohol. Furthermore, the influx of sprawl combined with a lack of public transportation make suburban and rural dwellers increasingly susceptible to DUI. Mass transportation is hard to come by in suburban areas, much like it is in rural locations. With the exception of unreliable bus service that typically does not service the entire city, suburban inhabitants are often

unable to obtain the type of transportation they require (Morris, 2005). Therefore, the statistics may show that urban areas present higher rates of DUI arrest than rural areas due to the inclusion of suburbs. The available data does not account for suburban areas, which, for the purposes here, take on many of the same characteristics important to this discussion as do rural areas. It cannot be ruled out that should be DUI arrest rates are influenced in part by individuals who have moved in droves to the suburbs. The limitation is that the data do not designate a DUI offender as an urban, suburban, or rural resident. If those living in suburban areas present higher DUI rates than those living in the center of cities, then it should be expected that rural residents will produce similar, if not higher, rates due to travel distances.

Finally, an analysis of the socioeconomic status in relation to DUI arrests should be examined. Those who cannot afford taxis in areas with or without more affordable means of public transportation may become accustomed to drinking and driving. It becomes a habit. Much like the alcoholic who drinks and drives so much due to frequency of inebriation, so too might those who cannot afford alternative means of transportation. Moreover, affluent individuals will have the means of affording high priced lawyers that may lobby and convince a judge to reduce the initial sentence. It will be less likely that individuals in lower classes will have these same resources. Although poverty is accounted for as a control variable in this study, the actual socioeconomic standing of those arrested in each county is not given. Socioeconomic status should be taken into greater consideration in future endeavors regarding driving under the influence. Unfortunately, that factor was beyond the scope of this study. In the

aforementioned cases, the data is not completely accurate when evaluating the DUI arrest rate and the associated problems in Alabama counties.

Policy Implications

The purpose of this study is not to point out flaws in the current DUI law. Although many problems in the existing laws exist and are in need of rectification, examining these issues is not of primary importance here. Rather, which county level policies can be altered or ameliorated in order to reduce the incidence of DUI arrests, and subsequently, drunk drivers. Within the context of wet and dry county status and population density, what can be done so that fewer DUI arrests will take place?

First of all, the issue of wet and dry county status should be addressed. There is evidence in the examination of Alabama counties that wet counties possess higher rates of DUI arrests. These rates may be attributed to driving distances wet count residents must incur in order to acquire and consume alcohol despite their proximity to alcohol retailers. This would not be as problematic if more cities within the counties provided affordable mass transit. After all, the point of the DUI arrest is twofold. The driving public is kept safe by removing dangerous drivers from the road. Essentially, wet county residents, like dry county residents, must still drive to obtain alcohol. The only difference is the number of miles traveled. Drinking and driving will always occur in some capacity. Completely stopping it is unrealistic. However, if the number of drunk drivers on the road decreases, so too will the number of deaths related to alcohol.

The citizens of each county in the state of Alabama are allowed to vote on the legal status of alcohol in their cities. Some counties remain wet due to a variety of

reasons. These individuals feel as though keeping alcohol legal inside the county lines provides a great deal of local income to local business owners. Furthermore, tax revenues will also be increased in a location where the sale of alcohol is legal. However, the statistics indicate that the legality of alcohol incurs a significant toll on the lives of those living in wet counties. Those who do choose to drink will find a means of doing so regardless of their ability to travel safely to and from drinking establishments. Therefore, it may be in the best interests of citizens in wet counties to vote for a county wide tax for the purposes of building a mass transit infrastructure. At the very least, the largest cities in each county should consider such a tax increase so that perhaps fewer lives will be lost due to drunk driving incidents. This way, those who do drink will have an alternative to driving drunk when choosing a way to commute.

The other main variable in this study that affected rates of DUI was population density. Policy makers should also focus on this factor when determining the most effective ways of dealing with the DUI problem. It was found that DUI arrest rates were greater in areas with higher population densities. This means that more urban areas possessed greater DUI arrest rates. Although urban areas tend to have access to forms of public transportation, this is not necessarily the case in Alabama. None of the major metropolitan areas in Alabama are equipped with a subway system. Furthermore, bus service in these areas stops in the early evening before the majority of drinking takes place. Therefore, citizens living in highly populated areas will have trouble finding safe and affordable transportation back home after consuming alcohol. This problem is exacerbated for citizens living in suburban peripheries of urban areas. Even if public transportation was available, it would be unlikely that these services would extend into

the suburbs. It is possible that, due to increased driving distances, suburban residents are responsible for a substantial number of DUI arrests in densely populated areas. As such, Alabama policy makers should consider instituting some type of bus or shuttle service that can provide free or reduced cost transportation to drinkers searching for a safe way of returning home. This service would pick up passengers from parts of cities with high concentrations of restaurants and bars. Clearly a system of this sort would not be able to drop riders off individually at their homes. However, the shuttle service could run along the same route as the city's bus service. Passengers could exit the shuttle when they were at a stop in walking distance of their residence.

Conclusion

Although great strides have been made by public officials and national policy makers, a great deal of work remains with respect to the DUI problem. Far too often it is believed that the availability of alcohol is the primary cause of alcohol related problems, particularly DUI arrests. However, the larger issue is access to a safe means of transportation in areas where the greatest number of individuals drink. Affordable and reliable access to mass public transportation in wet cities would effectively reduce drunk driving incidence. However, those who do choose drink alcohol will find a means of doing so despite the inconvenience of living in a dry county. Given American's reliance on the automobile as a primary means of transportation, it is no surprise that the DUI problem remains problematic. This phenomenon will be exacerbated in wet counties, especially those where no safe transportation is available.

REFERENCES

- Barnes, G. M., & Welte, J. W. 1988. "Patterns and Predictors of Alcohol Use Among 7th-12th Grade Students in New York State." *Journal of Studies on Alcohol*, 47.
- Berman, Matthew, Hull, Teresa, and May, Phillip. 2000. "Alcohol Control and Injury Death in Native Alaskan Communities: Wet, Damp, and Dry Under Alaska's Local Option Law. *Journal of Alcohol Studies*. Vol. 61, Issue 2.
- Borders, Tyrone F. and Booth, Brenda M. 2007. "Rural, Suburban, and Urban Variations in Alcohol Consumption in the United States: Findings From the National Epidemiologic Survey on Alcohol and Related Conditions." *Journal of Rural Health*. Vol. 23, Issue 4.
- Brown University Digest of Addiction Theory & Application. 2007. "College Freshmen Drink at Levels Well Beyond the Binge Threshold." *DATA*. Vol. 26, Issue 1.
- Caetano, Raul, and McGrath, Christine. 2005. "Driving Under the Influence (DUI) Among U.S. Ethnic Groups." *Accident Analysis & Prevention*. Vol. 37, Issue 2.
- Cavaiola, Alan and Wuth, Charles. 2002. *Assessment and Treatment of the DWI Offender*. The Haworth Press. New York.
- Cherpitel, Cheryl J. 1996. "Regional Differences in Alcohol and Fatal Injury." *Journal of Studies on Alcohol*. Vol. 57, Issue 3.
- Distilled Spirits Industry. 1983. *Annual Statistical Review, 1982*. Wahsington, D.C.: Distilled Spirits Industry.
- Fatality Analysis Reporting System Encyclopedia. 2008. *National Statistics*. Retrieved May 1, 2008. <http://www-fars.nhtsa.dot.gov/Main/index.aspx>.
- Federal Bureau of Investigation. 2005. "Crime in the United States 2005." *Tables 50 and 58*. Retrieved May 5, 2008. <http://www.fbi.gov/ucr/05cius/arrests/index.html>.
- Fell, J.C. 1995. "Repeat DUI offenders in the United States, Traffic Tech." *Technology Transfer Series* Vol. 85, National Highway Traffic Safety Administration.

- Fletcher, Paula C., and Skinner, Kate. 2006. Do Drinking Practices At University Differ Among Students From Urban and Rural Centers? A Preliminary Examination of Knowledge, Attitudes and beliefs. *College Student Journal*. Vol. 40, Issue 2.
- Geller, E. Scott and Lehman, Galen R. 1988. Drinking-Driving Intervention Strategies: A Person-Situation Behavior Framework. In *Social Control of the Drinking Driver*.
- Harris, David A. 1997. "Driving While Black and All Other Traffic Offenses: The Supreme Court and Pretextual Traffic Stops." *Journal of Criminal Law & Criminology*. Vol. 87, Issue 2.
- Hingson, Ralph W., Timothy Heeren and Michael R. Winter. 1999. "Preventing Impaired Driving." *Alcohol Research & Health*. Vol. 23, Issue 1.
- Holder, Harold D. 1997. "Alcohol Use and a Safe Environment" *Addiction* 92.
- Hunter, Sarah B., Wong, Eunice, Beighley, Chris, and Morral, Andrew. 2006. "Acculturation and Driving Under the Influence: A Study of Repeat Offenders." *Journal of Studies on Alcohol*. Vol. 67, Issue 3.
- Jacobs, James B. 1989. *Drunk Driving: An American Dilemma*. The University of Chicago Press.
- Kenkel, D., and Manning, W. 1996. "Perspectives On Alcohol Taxation." *Alcohol Health & Research World*. Vol. 20, Issue 4. In Hingson, Ralph W., Timothy Heeren and Michael R. Winter. 1999. "Preventing Impaired Driving." *Alcohol Research & Health*. 23.1.
- Meeks, Kenneth. 2000. *Driving While Black*. Broadway Books, New York.
- Morris, Douglas E. 2005. *It's a Sprawl World Afterall: The Human Cost of Unplanned Growth-and Visions of a Better Future*. New Society Publishers.
- NHTSA's National Center for Statistical Analysis. "Alcohol Related Traffic Fatalities in 2006". *Traffic Safety Facts*. August 2007. <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/RNotes/2005/809904.pdf>.
- Outwin, Christopher Maxwell. 1987. *The Effect of Anti-Drunk-Driving Television Public Service Announcements Style, Theme, and Level of Threat on an 18-24 Year Old Audiences Cognitive, Motivational and Attitudinal Response*. Boston University, Manuscript.
- Pampel, Fred C. 2004. *Racial Profiling*. Facts on File, New York.

- Powers, Edward L., and Wilson, Janet K. 2004. Access Denied: The Relationship Between Alcohol Prohibition and Driving While Under the Influence. *Sociological Inquiry*. Vol. 74, Issue 3.
- Putnam, Robert D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster. New York.
- Rephann, Terance J. 1999. Links Between Rural Development and Crime. *Papers in Regional Science*. 78.
- Ross, Laurence H. 1992. *Confronting Drunk Driving: Social Policy for Saving Lives*. Yale University Press.
- Sarkar, Sheila; Andreas, Marie; De Faria, Fabio. 2005. Who Uses Safe Ride Programs: An Examination of the Dynamics of Individuals Who Use a Safe Ride Program Instead of Driving Home While Drunk: *American Journal of Drug & Alcohol Abuse*. Vol. 31, Issue 2.
- Schnelle, John, Mary Weathers, Jerry Hannah, and M. Patrick McNess. 1975. "Community Social Evaluation: A Legallized Liquor Law in Four Middle Tennessee Counties." *Journal of Community Psychology*. Vol. 3.
- Schulte Gary, Sarah Lynn, Aultman-Hall, Lisa, McCourt, Matt, and Stamatiadis, Nick. 2003. Consideration of Driver Home County Prohibition and Alcohol-Related Vehicle Crashes. *Accident Analysis and Prevention*. Vol. 35, Issue 5.
- Scribner, R.A, Mackinnon, D.P., and Dwyer, J.H. 1994. Alcohol outlet density and motor vehicle crashes in Los Angeles County cities. *Journal of Studies on Alcohol* Vol. 55, Issue 4. In. Hingson, Ralph W., Timothy Heeren and Michael R. Winter. 1999. "Preventing Impaired Driving." *Alcohol Research & Health*. Vol. 23, Issue1.
- Voas, Robert B., Harold D. Holder, and Paul J. Gruenewald. 1997. "The Effect of Drinking and Driving Interventions on Alcohol-Involved Traffic Crashes within a Comprehensive Community Trial." *Addiction*. 92
- Warner, Jr. 1982. "Rural Crime, Rural Criminals, Rural Delinquents: Past research and Future Directions." *Criminal Justice In Rural America*. U.S. Department of Justice, National Institute of Justice, Washington, DC.
- Williams, Allan F. 2006. "Alcohol-impaired driving and its consequences in the United States: The past 25 years." *Journal of Safety Research*. Vol. 37, Issue 2.

- Windle, Michael. 2003 "Alcohol Use Among Adolescents and Young Adults." *Alcohol Research & Health*. Vol. 27, Issue 1.
- Winn, Russel G., and Giacomassi, David. 1993. "Effects of County-Level Alcohol Prohibition on Motor Vehicle Accidents." *Social Sciences Quarterly*. University of Texas Press. Vol. 74.
- World Health Organization. 2004. "The World Health Report, 2004". *Programmes and Projects*. Retrieved May 5, 2008. <http://www.who.int/whr/2004/en/>.
- Yu, Jiang and Williford, William R. 1993. "Problem Drinking and High-Risk Driving: An Analysis of Official and Self-Reported Drinking-Driving in New York State." *Addiction*. Vol. 88, Issue 2.

Table 1: Descriptive Statistics: Variables in Alabama County DUI Study

<u>Variable</u>	<u>N</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Mean</u>	<u>Std. Deviation</u>
Raw DUI Value	65	6	1,602	200.477	297.503
Legal Alcohol Status	65	0	1	0.74	0.443
Population Density	65	14.8	595	85.074	97.201
Percent Black	65	0.06	82.5	27.603	27.79
Percent Poverty	65	7	30.4	18.134	4.932
Average Age	65	0.14	0.28	0.192	0.021

*Choctaw and Dallas counties are excluded from this study due to lack of county level reporting of DUI arrest rates.

Table 2: Alabama DUI Arrest All Variables

	dui	wetdry	officer	age	density	pctpoverty	pctmale	pctblack
dui	1							
	65							
wetdry	.275(*)	1						
	0.027							
	65	65						
officer	.772(**)	.279(*)	1					
	0.000	0.031						
	60	60	60					
age	0.024	0.012	0.061	1				
	0.850	0.925	0.642					
	65	65	60	65				
density	.783(**)	0.192	.875(**)	0.095	1			
	0.000	0.126	0.000	0.449				
	65	65	60	65	65			
pctpoverty	-	0.212	-	.255(*)	-	1		
	.417(**)		.434(**)		.525(**)			
	0.001	0.091	0.001	0.041	0.000			
	65	65	60	65	65	65		
pctmale	0.149	-0.203	-0.053	0.145	0.089	-0.260(*)	1	
	0.237	0.104	0.688	0.249	0.482	0.037		
	65	65	60	65	65	65	65	
pctblack	-0.282(*)	.387(**)	-0.302(*)	0.171	-	.806(**)	-	1
	0.023	0.001	0.019	0.174	.398(**)	0.000	.381(**)	
	65	65	60	65	65	65	65	65

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3: Linear Regression Models for DUI Arrest Rate in Alabama Counties

<u>Variables</u>	<u>Unstandardized Coefficients</u>
Legal Alcohol Status	.642 (.124)
Population Density	1.146 (.000)**
Percent Black	.004 (.638)
Male Percent	.119 (.135)
Poverty Percent	-.017 (.676)
Average Age	-.812 (.467)
Rsquare =.648 (F = 17.795)	

** Correlation is significant at the 0.01 level (2-tailed)

Table 4: Alabama Criminal Justice Information Center 2006 DUI Data By County

<u>County</u>	<u>Frequency</u>	<u>Percent</u>	<u>County</u>	<u>Frequency</u>	<u>Percent</u>
Autauga	79	0.61	Jackson	96	0.74
Baldwin	1020	7.83	Jefferson	906	6.95
Barbour	51	0.39	Lamar	6	0.05
Bibb	42	0.32	Lauderdale	57	0.44
Blount	103	0.79	Lawrence	26	0.2
Bullock	86	0.66	Lee	530	4.07
Butler	59	0.45	Limestone	541	4.15
Calhoun	390	2.99	Lowndes	30	0.23
Chambers	142	1.09	Macon	6	0.05
Cherokee	8	0.06	Madison	1602	12.29
Chilton	167	1.28	Marengo	24	0.18
Clarke	69	0.53	Marion	28	0.21
Clay	11	0.08	Marshall	346	2.66
Cleburne	39	0.3	Mobile	515	3.95
Coffee	92	0.71	Monroe	55	0.42
Colbert	250	1.92	Montgomery	59	2.15
Conecuh	19	0.15	Morgan	280	0.15
Coosa	19	0.15	Perry	20	0.41
Covington	105	0.81	Pickens	54	0.41
Crenshaw	44	0.34	Pike	119	0.91
Cullman	123	0.94	Randolph	62	0.48
Dale	219	1.68	Russell	89	0.68
De Kalb	165	1.27	St. Clair	358	2.75
Elmore	295	2.26	Shelby	1073	8.23
Escambia	94	0.72	Sumter	27	0.21
Etowah	576	4.42	Talladega	346	2.66
Fayette	37	0.28	Tallapoosa	165	1.27
Franklin	93	0.71	Tuscaloosa	584	4.48
Geneva	41	0.31	Walker	105	0.81
Greene	15	0.12	Washington	10	0.08
Hale	16	0.12	Wilcox	62	0.48
Henry	23	0.18	Winston	6	0.05
Houston	352	2.7			

* Percent indicates county share of all DUI Arrests in Alabama.

APPENDIX: ALABAMA WET/DRY COUNTY MAP

