Enforcement following 0.08% BAC law change: Sex-specific consequences of changing arrest practices?

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Abstract

This research evaluated effects of stricter 0.08% BAC drunken driving law on changes in sex-specific DUI arrest rates, controlling for increased law enforcement resources and shifts in DUI-related behaviors. Another main purpose, the study assessed female/male differences in arrest increases due to broader enforcement standards and efforts. Panel data was assembled for 24 states over 1990–2007 on DUI arrests, alcohol policy, law enforcement resources, drinking and drunken driving prevalence. Two-way fixed-effects seemingly unrelated regression models predicted female versus male changes in DUI arrests following implementation of lower legal limits of intoxication, net controls. Findings suggest, first, a broader legal definition of drunken driving intending to officially sanction less serious offenders (0.08% vs. 0.10% BAC) was associated with increased DUI arrests for both sexes. Second, growth in specialized DUI-enforcement units also was related to increased arrests. Whereas male and female arrest trends were equally affected by the direct net-widening effects of 0.08% BAC alcohol-policy, specialized DUI-enforcement efforts to dig deeper into the offender-pool had stronger arrest-producing effects on females, particularly prior to law change. Specifying how changes in law and enforcement resources affect arrest outcomes is an important precursor to alcohol-policy analyses of effectiveness. A potential unintended consequence, effects of law and enforcement may differ across population segments.

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Contributors

Schwartz designed the study and supervised data collection and cleaning. Davaran conducted literature searches, created tables and figures, and, primarily collected and cleaned data. Schwartz and Davaran conducted the statistical analysis. Schwartz wrote the first draft of the manuscript and Davaran contributed to and approved the final manuscript.

Conflict of Interest

All authors declare that they have no conflicts of interest.

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Keywords

Driving under the influence; Sex Differences; Trends in drinking behavior; Alcohol-related Public Policy; Arrests

1. INTRODUCTION

Drunk driving is a significant public health problem. It is a leading cause of alcohol-related mortality, claiming almost 10,000 American lives in 2011, and a significant share of law enforcement activity, comprising 10% of all arrests and equating to over 1.2 million drunk drivers per year (National Highway Transportation Safety Administration [NHTSA], 2012; US Department of Justice [DOJ], 2013).

Increasingly stringent legislation aimed at reducing the high social costs of drinking and driving has proven effective. Prior to the 1980s, few states explicitly defined alcohol-impaired driving based on blood alcohol content (BAC). Initial limits for driving were set at 0.10% or even 0.15% BAC. In 1983, Utah and Oregon adopted 0.08% BAC per se laws, lowering legal intoxication standards and establishing BAC level as evidence of intoxication. Prompted by the federal government, by 2005, all states adopted 0.08% BAC legislation (Alcohol Policy Information System [APIS], 2009; Mosher and Akins 2007).

Policy evaluations of 0.08% BAC per se laws concluded that adopting a 0.08% BAC limit was associated with a 5–8% reduction in alcohol-related fatalities, according to pooled time-series within-state estimates (Hingson, Heeren, & Winter, 2000). The proportion of alcohol-involved fatal crashes dropped from 60% of fatal crashes to less than 40% (NHTSA, 2007) and experts estimated that 0.08% BAC implementation may save as many as 500 lives per year (Eisenberg, 2003). Lower 0.08% BAC limits are an effective mechanism to reduce drunken driving (Eisenberg, 2003), albeit with varying effects across the United States.

1.1 "Law-in-action" and "Law-on-the-books:" Enforcement of 0.08% BAC law

Missing in most evaluative work of the BAC law's effectiveness in reducing drunken driving is attention to *enforcement* of new BAC laws. A GAO report (Government Accounting Office, 1999) concluded, "The effect of a 0.08% BAC law depends on a number of factors, including…how well it is enforced." Similarly, Wagenaar et al. (2007) propose, "The most obvious plausible reason for state-by-state differences in effects [of .08 BAC laws] are differences in implementation…[i.e.,] *enforcement*." What makes a law work, in part, is heightened perception of strict enforcement whereas lax enforcement might hamper a law's effectiveness.

Enforcement is defined as state actions to bring about compliance with specific laws, via policing, adjudication, and sanctioning (APIS, 2009a). Compliance refers to self-regulation of behavior in accordance with the law. The main focus here is on law enforcement activity by police. Arrests are a standard marker of police productivity in enforcing the law (O'Brien, 1996) and drunk driving is one of the few offenses where officers proactively seek offenders (Jacobs, 1989). Changes in arrest are part of a complex system, affected by law enforcement techniques, prioritization, and resources; reporting and recording practices; and

current legal definition of DUI. (Alcohol consumption and drunken driving behaviors also influence arrest rates.) Although enforcement patterns are recognized as important in shaping policy effectiveness (Ross, 1994), past empirical studies have assumed even and ardent enforcement of new alcohol-related policies, a dubious assumption.

Studies of some jurisdictions following 0.08% BAC law implementation showed the expected increase in DUI arrests following broadened definitions of drunken driving (Shore, McCoy, Toonen, & Kuntz, 1988). However, despite more motorists being susceptible to arrest due to more expansive arrest criteria, several case studies indicated no increase or even *declines* in (male) DUI arrest rates following toughened legislation (Kinkade & Leone, 1992). Law passage may have reduced drunken driving behavior by increasing compliance with the law, accounting for fewer arrests. Or, enforcement efforts may not have increased commensurate with broadened legal definitions of drunken driving. Extant findings are mixed and there are no large-scale studies of law enforcement response to such legal change.

It is important to know the association between 0.08% BAC law passage and subsequent law enforcement outcomes, controlling for other relevant changes such as compliance levels and enforcement resources, because a law's deterrent effect is contingent on the threat of formal sanctioning, as well as enforcement efforts. Examining "law in action" (i.e., enforcement) to complement studies of "law on the books" (i.e., passing 0.08 BAC law) (Black, 1976) is important because law enforcement outcomes change in significant and sometimes unanticipated ways as a result of law change (Schwartz & Rookey, 2008; Schwartz, 2008; Steffensmeier et al., 2005).

1.2 Equal application of the law?: Drunken driving arrests of women

Crime scholars are interested in how enforcement efforts have changed in response to more stringent legal definitions of drunken driving and whether such enforcement changes are equally applied across offender groups. Arrest statistics indicate a puzzling rise in the share of drunken driving arrestees who are women. In 1980, about 9% of DUI arrestees were female but by 2002 this number had doubled to 18% (Schwartz, 2008), an especially notable trend because it contradicts the mid-1990s crime drop for nearly all other offenses. Overall, DUI rates have declined significantly for males, but much less for females (Schwartz, 2013).

Although lifestyle changes may account for women's DUI arrest increases relative to men, those studying gender, criminal offending, and social control highlight a potential unintended consequence of the lower 0.08% BAC limit. Women are less likely than men to self-report, get arrested for, or fatally injure someone while driving drunk (Schwartz, 2008). Women arrestees, drivers in fatal crashes, and participants in roadside BAC surveys are also less intoxicated, on average, than men (NHTSA, 2007; Zador, Krawchuk, & Voas, 2000). Broadening the purview of law to less intoxicated drivers may inadvertently target female-typical (less severe) offending patterns.

A series of studies by Steffensmeier, Schwartz, and colleagues (Steffensmeier, Schwartz, Zhong, & Ackerman, 2005; Schwartz 2008; Schwartz & Rookey, 2008; Schwartz, Steffensmeier, & Feldmeyer, 2009; Schwartz, Steffensmeier, Zhong, & Ackerman, 2009) theorize and demonstrate how legal changes that widen the definition of a crime to

encompass more minor behaviors are likely to target female offending patterns. That is, mobilizing law enforcement against more minor behaviors may prompt the 'discovery' of female drunk driving by targeting behaviors that are more typical for women. Greater identification of women may result from a more encompassing law-on-the-books that "widens the net" to less serious offenders; or, police may target enforcement efforts to make arrests of less intoxicated drivers (disproportionately women), "digging deeper" into the pool of existing offenders.

Policies redefining the legal standard for driver intoxication may inadvertently increase women's DUI arrests, without any underlying change in women's actual drunk driving behavior, due to the interplay between the gendered nature of offending and net-widening changes in official sanctioning. Because there are relatively more women among less serious offenders, widening the arrest net to define "drunk driving" more broadly has the potential to ensnare more female offenders, independent of any changes in women's drunken driving behavior. Initial empirical evidence is supportive (Schwartz and Rookey, 2008). Schwartz' studies offer indirect evidence that women's overrepresentation in DUI arrests, relative to their share of offending, occurred during the same period when many states passed 0.08% BAC laws. Robertson et al. (2011) identified a direct link between maintaining a 0.08% BAC law and greater social control of Mississippi women's drunk driving, albeit for a sample of limited representativeness.

Another important element of enforcement is digging deeper into the existing offender pool by directing law enforcement efforts and resources toward the crime problem. Such dedicated actions signaling law enforcement prioritization include: sobriety checkpoints (if legal), proactive enforcement programs like saturation patrols, Task Force Operations, and grant-funded over-time programs to increase specialized DUI units. Whether such police practices impact women's arrest trends is an under-theorized element in understanding changes in the social control of women, which has focused on widening offense definitions in law-on-the-books. Presumably, these targeted enforcement activities increase opportunities for arrest, particularly of less intoxicated drivers who otherwise might not be identified by law enforcement.

Another change potentially relevant to understanding the relative increase in women's DUI arrests, increased female representation among law enforcement has been linked to broader changes in women's equal treatment under the law, including as offenders, and a general shift toward gender-neutral policing and increased bureaucratization or uniformity in decision-making protocols. If chivalrous treatment of women by law enforcement declines, female arrests may seem to increase.

1.3 The current study

The current study is the first large-scale evaluation of how law enforcement responded to 0.08% BAC law change. Importantly, for a range of states, we offer a direct test of whether an unintended consequence of lower blood-alcohol-concentration limits was to disparately increase female arrests for drunken driving, net changes in compliance with the law. Also unique to this study, we examine the sex-specific results of law enforcement efforts that dig deeper into the offender pool to produce more DUI arrests via specialized DUI units. We

evaluate independent effects of specialized DUI-unit coverage and effects in conjunction with passing a 0.08% BAC law.

2. METHODS

This study is a population-level analysis of DUI arrests over time, focusing on the relationship between 0.08% BAC law change, law-in-action measures, and state-level drunken driving arrest counts of women and men.

2.1 Geographic Units

U.S. states were the logical unit of analysis because 0.08% BAC statutes were passed at the state-level. The study included 24 states which reliably reported arrest data to the federal government between 1990 and 2007, yielding 450 state-year observations.

2.2 Measures

To describe sample characteristics, Table 1 displays mean rates of key variables, averaged across states, for starting and final years of the study (1990 (2007).

2.2.1. Sex-specific arrests—The dependent variable, sex-specific adult arrest counts (ages 21–64) compiled by the FBI from over 17,000 local law enforcement agencies across the U.S., were aggregated to the state-level, providing a highly comparable measure of *enforcement outcomes* over time and across states. Counts were adjusted for any police agencies' less-than-full-year reporting and for non-reporting by some agencies within states. Between 1990 and 2007, yearly counts of police-detected drunk drivers ranged from approximately 590,000 to 930,000. Sex-specific rates per 100,000 females/males ages 21–64 were logged to induce normality. These *Uniform Crime Reports* (UCR) are summary data so they do not provide detail on arrestee's blood-alcohol-level or other incident characteristics.

2.2.2. 0.08% BAC law implementation—The primary relationship of interest is the association between 0.08% BAC law implementation and subsequent arrest levels. A *0.08% BAC Law-on-the-Books* was coded 0 during years prior to 0.08% BAC legislation and 1 for all years when 0.08% law was in effect. Mid-year implementation was represented by a fraction of the year 0.08% BAC law was in effect. Effective dates were based on the *Alcohol Policy Information System (APIS)*, which covers alcohol and traffic safety laws since 1998. Pre-1998 data were provided by Thomas Dee through personal communication and in Kaplan and Prato (2007).

2.2.3. Law enforcement resources—Law enforcement mobilization against drunk driving was measured by the share of police agencies in a state with part- or full- time personnel designated to *specialized DUI patrol*. Estimates are from *Law Enforcement Management and Administrative Statistics,* collected every three years since 1987 by the Bureau of Justice from 3,000+ law enforcement agencies, including all large agencies (100+ sworn officers) and a representative sample of smaller agencies. Linearly interpolated values for interceding years produced similar regression results as setting those values to zero and including a dummy-coded missing indicator. *Female Percent of Law Enforcement Officers* was calculated based on UCR Police Employee Data on sworn officers. Per capital *sworn*

police officers per 1000 people, also from UCR tables, controlled for variation over time in law enforcement resources to make arrests.

2.2.4. Self-reported drunk driving—*Compliance* with DUI laws was measured using aggregated self-reports of drunken driving based on sample-weighted individual responses to the Centers for Disease Control and Prevention's *Behavioral Risk Factor Surveillance System (BRFSS).* Since 1984, BRFSS has surveyed a representative sample of non-institutionalized adults in each state, using a multistage-cluster design and random-digit dialing (for data collection methodology, see Remington, Smith, Williamson, Anda, Gentry, & Hogelin, 1988). The median response rate was 58% (percentages vary by state/year).

Respondents were asked whether they had "driven when they had perhaps too much to drink." Question wording was consistent over time and across states. Values for state-years when the drunken driving question was not asked were linearly interpolated. Item-nonresponse was very low – less than 1 percent/year – and did not differ by sex. Increased social stigma may have decreased respondents' willingness to admit drunken driving (Grasmick, Bursik, & Arneklev, 1993), but recent research suggests respondents have become *more,* not less, sensitive to alcohol's effects, increasing DUI self-reporting (Kerr, Greenfield, & Midanik, 2006).

2.2.5. Drinking Patterns—Changing prevalence of drinking alcohol was also measured using the BRFSS. Three non-overlapping drinking patterns were constructed (Greenfield, 2000): 1. *Occasional drinking* counted population-weighted male respondents who self-reported having at least 1 but fewer than 16 alcoholic drinks in the past 30 days (less than 4/week on average) and females who had 1–7 alcoholic drinks (averaged less than 2/week). 2. *Moderate drinking* counted more regular drinkers who remained within government recommendations: males who drank 16 to 59 drinks within thirty days (less than 2 drinks/day on average) and females who had 8–29 drinks (averaged less than 1 drink/day). 3. *Heavy drinkers* (2+ drinks/day for males; 1+ drinks/day for females) exceeded health recommendations. *Binge* drinking patterns (5+ drinks on one occasion in the past thirty days) also were measured.

2.2.6. Controls—In every model we include basic controls for *unemployment rate* and *percent of the population most at risk of driving drunk* (sex-specific ages 21–24).

2.3 Analytic Plan

To estimate and compare sex-specific relationships between implementation of 0.08% BAC law and within-state change in logged DUI arrest rates, we estimated seemingly unrelated regression models with fixed effects for state, to hold constant permanent differences between states, and year, to control impacts common to groups but varying by year. Fixed-effects models for panel data produce unbiased, within-state estimates by controlling for all stable, unmeasured state characteristics that might influence drunken driving arrests (Allison & Christakis, 2006). Therefore, net effects on DUI arrests of *0.08% BAC law* variables are *not* due to differences between states. Models produce coefficients which, when exponentiated, are estimates of average yearly within-state percentage increase or decrease

in drunken driving arrest rates associated with a one-unit increase in the independent variable. Note that in regression analyses, all continuous variables were mean-centered so coefficients are interpreted as predicted average percentage increase/decrease, holding other variables at their mean values. Seemingly unrelated regression accounts for correlated error structures across female and male models, therefore producing equality of coefficient tests with correct p-values (Zellner 1962). A significant sex difference between male and female coefficients indicates a stronger (or different) effect on one sex than the other.

3. RESULTS

Toward our first goal of evaluating how law changes that lowered legal intoxication limits affected DUI enforcement outcomes, Table 2, Model 1 shows expected effects on women's and men's arrests of 0.08% BAC law-on-the-books, net controls for unemployment rate and percent of the female/male population ages 21–24. Implementing and maintaining a 0.08% law was significantly associated with an increase in both female and male DUI arrests. Compared to years prior, having a 0.08% law-on-the-books was associated with 14% ($e^{0.13}$) more women arrested and 13% ($e^{0.12}$) more men arrested per year, on average. This modest female/male difference is not statistically significant.

Control variables were significant and exerted stronger effects on one sex than the other. Increased unemployment was associated with lower DUI arrest rates, particularly for females. Growth in the young adult population (ages 21–24) was related to significantly higher male arrest rates, but no change in female rates. Subsequent models tested whether law effects were robust to specialized law enforcement mobilized against DUI, changing sex-composition of police, law enforcement personnel resources, and drinking and drunk driving behaviors, net controls.

A growing share of police agencies within the state with dedicated DUI personnel was associated with more arrests (Table 2, Model 2). A 10% increase in DUI-patrol coverage was linked to 4% ($e^{10(.004)}$) more female arrests and 2% ($e^{10(.002)}$) more male arrests per year, net controls. The ability of police to dig deeper into the offender pool through targeted DUI enforcement via specialized personnel had a significantly stronger effect on female arrest trends compared to males. Notably, however, the positive association between 0.08% BAC law-in-effect and arrests remained sizeable and significant, independent of law enforcement resources and other controls.

Growing female representation on the police force was related to increased male arrest rates, but no measurable change in female arrest rates (Table 2, Model 2). A 1% increase in the female share of law enforcement was associated with a 5% increase per year in male DUI arrest rates; there was no significant change for women. This sex difference is statistically significant – growth in the share of female officers is more strongly related to male than female DUI arrests. This sex difference is in the opposite direction of the 'decline in chivalry toward women' hypothesis. Sworn police officers per 1000 were negatively related to DUI arrests. Supplemental models (not shown, available upon request) tested whether the unexpected negative effect of police per capita was due to the lower propensity for DUI

arrests in jurisdictions with many officers focused on violent crimes; however, *police per capita* remained negative and significant even controlling for violent crime rate.

In Model 3, Table 2, we controlled for shifts in drinking behaviors and prevalence of drunken driving. Greater self-reported DUI prevalence was associated with higher male arrest rates but was non-significant for females, net controls. The sex difference was non-significant. Changes in the prevalence of occasional drinking, moderate drinking, and binge drinking were unassociated with arrest trends, net law change and other controls (models available upon request). An increase in heavy drinking prevalence was associated with higher female DUI arrest rates but no significant change in male rates. Sex differences were non-significant. Importantly, controlling for these exogenous factors did not alter the effect of 0.08% BAC law on DUI arrest rates.

Finally, Model 4 (Table 2) tested whether effects of dedicated DUI patrols on DUI arrests were conditional upon legal climate – 0.08% versus 0.10% BAC law-in-effect. As indicated by the negative coefficient, specialized DUI units produced relatively *fewer* arrests once the legal blood-alcohol limit changed to 0.08%; conversely, additional DUI patrols were more efficacious in producing arrests when a 0.10% BAC was in effect (see Figure 1). Although greater DUI-patrol coverage was consequential to arrest rates, once the legal BAC limit was lowered to 0.08%, there were diminished returns to increasing DUI-patrol coverage. A significant female/male difference across interaction coefficients means the relationship between BAC law and dedicated DUI patrols varies by sex, with steeper slopes for females than males at comparable BAC levels.

We conducted a number of supplemental tests to a) ensure results were robust and b) to further specify law and enforcement effects on arrest outcomes. The effect of 0.08% BAC law on arrests erodes as duration-in-effect increases, at a rate of about 3% per year for both sexes. As many policy-studies find, in anticipation of law change, DUI arrests increased by about 10% for both sexes during the year prior to law change. Arrests were not unusually high during initial year-in-effect, however. Additional controls for other traffic-safety and alcohol-related laws did not impact 0.08% BAC law effects. A primary seat belt law in effect was positively but non-significantly associated with arrests. Alcohol-tax increases were unassociated with subsequent arrests.

It would be desirable to better account for sex-specific changes in women's opportunities for drunk driving, but available measures are limited. Driver's licensing rates, sex-disaggregated since 1993, demonstrate no measurable impact on female DUI arrests and a modest positive association for males. However, variation over time in licensing rates is limited, a challenge for fixed-effects methods. Vehicle-miles-traveled by women versus men were available at the state-level for only two time points during the study, 1995 and 2001. Using these limited measures, we failed to detect an association between more driving and increased arrests of women or men.

4. DISCUSSION & CONCLUSION

A primary aim of the present study was to estimate the typical effect on arrest of a state's change to a 0.08% BAC limit defining intoxicated driving, addressing the important

question: How does law enforcement, or *law-in-action*, respond to change in alcohol policy, or *law-on-the-books*, such as the more expansive legal re-definition of "drunken driving" to include less intoxicated motorists? On average, net-widening alcohol policy increased arrests by 11–14%, beyond changes in contributing behaviors like prevalence of self-reported drunken driving, drinking patterns, and police officers available to enforce the law. In all scenarios (additive and interactive, net any/all controls), 0.08% law produced considerably more arrests than when a state used 0.10% BAC as the legal definition of DUI.

Dedicated DUI-patrols and more female police officers also were important in producing more DUI arrests. Specialized DUI units were more efficacious in producing arrests under 0.10% legislation compared to 0.08%; yet, 0.08% BAC law produced more arrests with comparable DUI-unit resources, net controls.

Larger social forces also affected drunken driving arrest rates. Unemployment was negatively related to DUI arrest rates, perhaps because unmeasured law enforcement resources contracted during economic downturns and/or drinking patterns shifted to less expensive private venues, which would reduce the risk of drunken driving and DUI detection. A demographic shift, growth in the young adult population, was related to increased male DUI arrest rates. Young men contribute disproportionately to the drunken driving problem (Schwartz & Rookey 2008).

A second major aim of this study was to address sub-group differences in application of the law: To what extent are net-widening effects of alcohol-enforcement policies like lower BAC limits evenly applied across sex-groups? The effect on arrest trends of having a 0.08% BAC law was no greater for females than males. However, DUI-related enforcement efforts aimed to dig deeper into the pool of potential offenders were more strongly associated with changes in female than male arrest levels. In other words, relative to men, more female drunk drivers are 'discovered' when states increasingly target DUI enforcement through more widespread dedicated-DUI patrols. There was no evidence that an increased share of female police officers was associated with reduced chivalry for women; in fact, an increased share of female officers was associated with greater male than female arrest increases.

Whereas many alcohol-policy studies have focused on a law's impact on offenders' behavioral outcomes (e.g., DUI-related fatalities), few systematic studies have investigated a theoretically important component of the law-behavior relationship – enforcement of alcohol-related law once it is on the books. Although the present study demonstrates important within-state effects of law passage and law enforcement on arrest outcomes, net self-reported behavioral changes, there are important study limitations. First, more stringent controls for law enforcement resources and for changes in women's and men's driving patterns and other sex-specific changes in opportunities for drunk driving are needed – but not available across states over time. Of key importance, there is little consensus about how to best measure enforcement efforts and few data sources exist for doing so. There is clear need to develop further multidimensional, more nuanced measures that better account for amount as well as type(s) of DUI enforcement. Further, in regard to gender, analyses of the National Personal Transportation Survey suggest women today are driving more miles and

perhaps at different times or for different purposes than in the past; unfortunately this information is not systematically available for states over time.

The present study focused on average within-state associations between 0.08% BAC law and arrests, however, there is marked across-state variation that also ought to be investigated. Why a 0.08% law produced ardent enforcement in some states compared to little change in other states is a topic for future studies. State-to-state differences in law enforcement practices and policies are numerous, but early investigations might focus on differences in levels of police professionalization, bureaucratization, and other organizational differences as well as resources committed to drunken driving and other indicators of ardent enforcement.

It is significant that alcohol-policies lowering legal BAC standards for driving-while-intoxicated tend to increase arrests because enforcement of DUI-policies is an important component of a law's effectiveness in reducing negative outcomes of drinking, such as drunken-driving fatalities. Moreover, DUI arrests continue to comprise a significant share of all law enforcement activity, even despite declining drunken driving behavior and arrest rates over the 1990s. Indeed, our results suggest declines in arrest rates were stemmed by almost 15% per year once 0.08% BAC limits were implemented during the 1990s and early 2000s.

With regard to the gendered effects of net-widening formal social control policies on arrest, our results are partially consistent with hypotheses laid out and initially tested by Steffensmeier, Schwartz, and colleagues (Steffensmeier et al., 2005; Kaplan & Prato, 2007; Schwartz & Rookey, 2008; Schwartz et al., 2009; Robertson, Liew, & Gardner, 2011). Contrary to expectations, implementing 0.08% BAC law does not seem to have sustained female DUI arrest rates any more than male rates, which have declined more steeply. Contributing to the narrowing sex-ratio in DUI arrests, however, was increased use of specialized DUI patrol units. Police enforcement activities aiming to dig deeper into the offender pool to produce more arrests may inevitably 'discover' more female offenders, relative to men, because the sex ratio in drunken driving is narrower at less serious ends of the spectrum of offending. An intriguing question for future research is whether the apparent increased formal social control applied to female drunk driving led to greater reductions in their DUI-related fatalities. Future studies of alcohol- and drug- policy effects should be sensitive to nuanced sex differences resulting from inadvertently gendered policies or enforcement practices.

Acknowledgments

References

Alcohol Policy Information System. Blood alcohol concentration limits: Adult operators of noncommercial motor vehicles. 2009. Retrieved January 15, 2009, from www.alcoholpolicy.niaaa.nih.gov

Alcohol Policy Information System. Measuring Alcohol Policy Enforcement and Compliance. 2009a. Retrieved Jan 15, 2009, from www.alcoholpolicy.niaaa.nih.gov

Allison PD, Christakis NA. Fixed-effects methods for the analysis of nonrepeated events. Sociological Methodology. 2006; 36(1):155–172.

Black, D. The Behavior of Law. New York: Academic Press; 1976.

Eisenberg D. Evaluating the effectiveness of policies related to drunk driving. Journal of Policy Analysis and Management. 2003; 22(2):249–274.

Federal Bureau of Investigation. Uniform Crime Reports: Crime in the United States. Washington, DC: U.S. Department of Justice; 1990–2007.

Government Accounting Office. Effectiveness of State .08 Blood Alcohol Laws. Washington, DC: 1999. Report No. GAO/RCED-99-179

Grasmick HG, Bursik RJ, Arneklev BK. Reductions in drunk driving as a response to increased threats of shame, embarrassment, and legal sanctions. Criminology. 1993; 31(1):41–67.

Greenfield TK. Ways of measuring drinking patterns and the difference they make: experience with graduated frequencies. Journal of Substance Abuse. 2000; 12(1):33–49. [PubMed: 11288473]

Hingson R, Heeren T, Winter M. Effects of recent 0.08% legal blood alcohol limits on fatal crash involvement. Injury Prevention. 2000; 6(2):109–114. [PubMed: 10875666]

Jacobs, JB. Drunk Driving: An American Dilemma. University of Chicago Press; 1989.

Kaplan S, Prato CG. Impact of BAC limit reduction on different population segments: A Poisson fixed effect analysis. Accident Analysis & Prevention. 2007; 39(6):1146–1154. [PubMed: 17920837]

Kerr WC, Greenfield TK, Midanik LT. How many drinks does it take you to feel drunk? Trends and predictors for subjective drunkenness. Addiction. 2006; 101(10):1428–1437. [PubMed: 16968344]

Kinkade PT, Leone MC. The effects of 'tough' drunk driving laws on policing: a case study. Crime & Delinquency. 1992; 38(2):239–257.

Mosher, CJ.; Akins, S. Drugs and Drug Policy. Thousand Oaks, CA: Sage; 2007.

National Highway Transportation Safety Administration. Traffic safety facts, 2007. Washington, DC: US Department of Transportation; 2007.

National Highway Transportation Safety Administration. 2012. http://www-nrd.nhtsa.dot.gov/Pubs/811700.pdf

O'Brien RM. Police Productivity and Crime Rates: 1973–1992. Criminology. 1996; 34(2):183–207.

Remington PL, Smith MY, Williamson DF, Anda RF, Gentry EM, Hogelin GC. Design, characteristics and usefulness of state-based Behavioral Risk Factor Surveillance 1981–1987. Public Health Rep. 1988; 103:366–75. [PubMed: 2841712]

Robertson AA, Liew H, Gardner S. An evaluation of the narrowing gender gap in DUI arrests. Accident Analysis & Prevention. 2011; 43(4):1414–1420. [PubMed: 21545874]

Ross, HL. Confronting drunk driving: Social policy for saving lives. Yale University Press; 1994.

Schwartz J. Gender differences in drunk driving prevalence rates and trends: a 20-year assessment using multiple sources of evidence. Addictive Behaviors. 2008; 33(9):1217–1222. [PubMed: 18499352]

Schwartz, J. Drunk driving trends. 2013. Retrieved April 1, 2013, from http://drunkdrivingtrends.wsu.edu/

Schwartz J, Rookey B. The narrowing gender gap in arrests: assessing competing explanations using self-report, traffic fatality, and official data on drunk driving, 1980–2005. Criminology. 2008; 46(3):637–671.

Schwartz J, Steffensmeier D, Feldmeyer B. Assessing trends in women's violence via data triangulation: arrests, convictions, incarcerations, & victim reports. Social Problems. 2009; 56(3):494–525.

Schwartz J, Steffensmeier D, Zhong H, Ackerman J. Trends in the gender gap in violence: re-evaluating NCVS and other evidence. Criminology. 2009; 47(2):401–425.

Shore ER, McCoy ML, Toonen LA, Kuntz EJ. Arrests of women for driving under the influence. Journal of studies on alcohol. 1988; 49(1):7–10. [PubMed: 3347078]

Steffensmeier D, Schwartz J, Zhong H, Ackerman J. An assessment of recent trends in girls' violence using diverse longitudinal sources: is the gender gap closing? Criminology. 2005; 43(2):355–406.

United States Department of Justice, Federal Bureau of Investigation. Crime in the United States, 2011. 2012. Retrieved 29 March 2013, from http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2011/crime-in-the-u.s.-2011/index-page

Wagenaar AC, Maldonado-Molina MM, Ma L, Tobler AL, Komro KA. Effects of legal BAC limits on fatal crash involvement: analyses of 28 states from 1976 through 2002. Journal of Safety Research. 2007; 38(5):493–499. [PubMed: 18023634]

Zador PL, Krawchuk SA, Voas RB. Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to driver age and gender: an update using 1996 data. Journal of Studies on Alcohol. 2000; 61(3):387–95. [PubMed: 10807209]

Zellner A. An efficient method of estimating seemingly unrelated regression equations and tests for aggregation bias. Journal of the American Statistical Association. 1962; 57(298):348–368.

Highlights

- We model DUI arrests as a function of BAC law change and enforcement in 24 states.

- A broader legal definition of drunken driving increased women's and men's arrests.

- Increases in specialized DUI-enforcement units increased women's and men's arrests.

- Law change to 0.08% BAC similarly affected male and female DUI arrest trends.

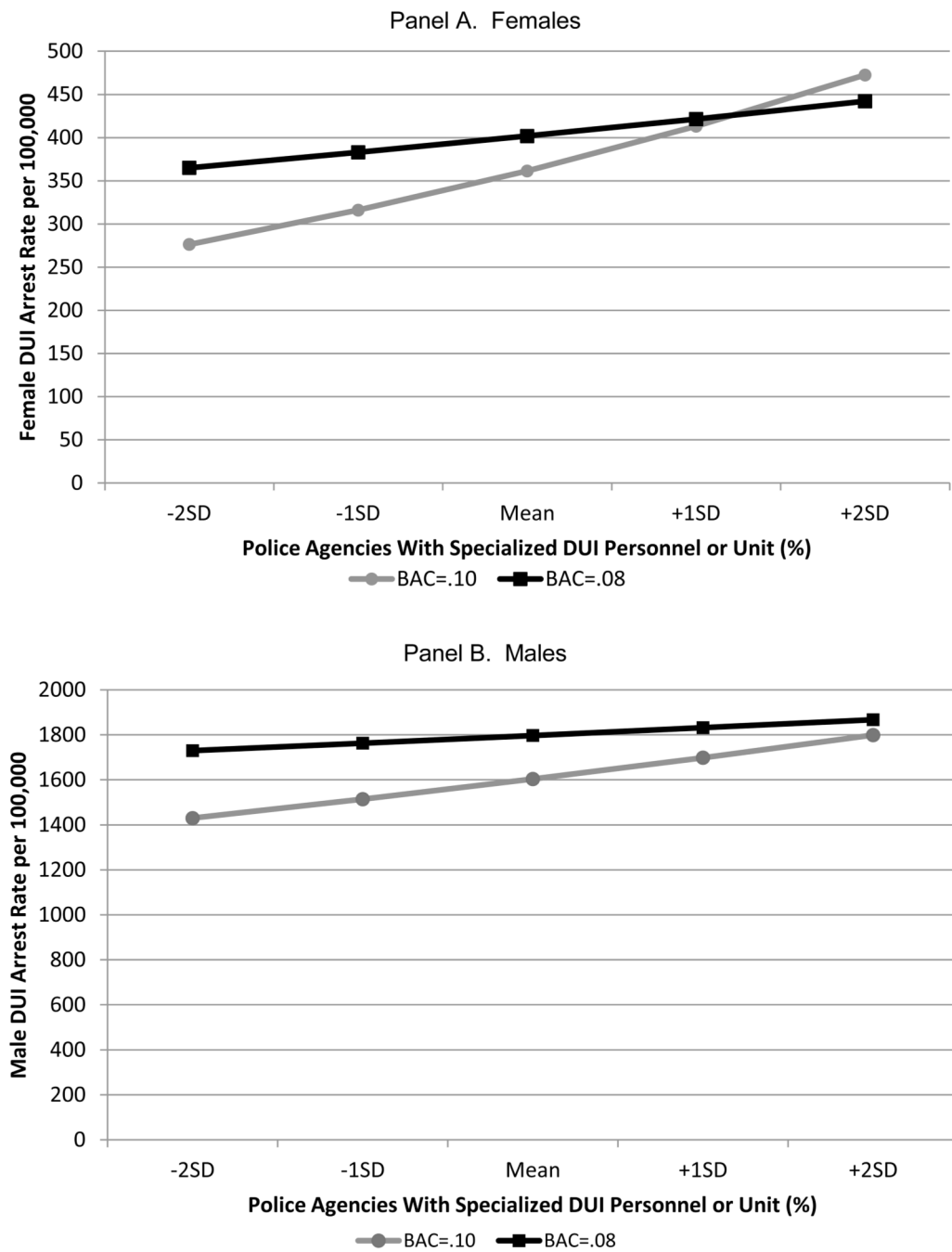- Growth in DUI-enforcement units increased female arrest rates more than male rates.

Figure 1.
Predicted Effect of DUI-Enforcement Units on DUI Arrest Rates for 0.08% vs. 0.10% BAC
law

Table 1

Descriptive Statistics of Study Measures in 1990 and 2007 (n=24 states)

	1990		2007		1990–2007
	Mean	SD	Mean	SD	% Change in Mean
DUI Arrests					
Female rate per 100,000	306	166	275	116	−5
Male rate per 100,000	2019	1059	1033	391	−32
Law Enforcement Resources					
DUI-Units (% coverage in state)	53	23	55	21	2
Female Pct of Sworn Officers	8	3	11	3	16
Sworn officers per 1000 pop	2	0.5	3	0.6	6
Compliance - Self-reported Drunk Driving					
Female rate per 100	1.5	0.8	1.4	0.6	−2
Male rate per 100	5	2	4	1	−12
Drinking Patterns [a]					
Occasional Drinkers					
Female rate per 100	25	6	25	5	0
Male rate per 100	31	9	31	5	0
Moderate Drinkers					
Female rate per 100	16	6	17	5	3
Male rate per 100	22	7	20	5	−5
Chronic Drinkers					
Female rate per 100	4	2	6	2	20
Male rate per 100	7	3	8	2	7
Controls					
Unemployment rate	6	1	4	1	−20
Pct of population ages 21–24					
Female rate per 100	10	1	9	1	−5
Male rate per 100	10	1	10	1	0

[a]Prevalence of three non-overlapping drinking patterns were measured as follows: 1. *Occasional drinkers* include those females who consumed between 1–7 alcoholic drinks in the past 30 days and those males who drank 1–15 drinks. 2. *Moderate drinkers* in the past 30 days consumed 8–29 drinks for women and 16–59 drinks for men. 3. *Chronic drinkers* exceeded health recommendations (30+ drinks for women in past 30 days; 60+ drinks for men).

Table 2

Fixed-Effects SUR Results: Female and Male Arrests as a Function of Law-in-Effect, Law Enforcement Resources & Controls

Variable Name	Females								Males							
	Model 1		Model 2		Model 3		Model 4		Model 1		Model 2		Model 3		Model 4	
	b	SE b	b	SE b	b	SE b	b	SE b	b	SE b	b	SE b	b	SE b	b	SE b
BAC Law-in-Effect (1=.08% BAC)	0.13*	0.05	0.11*	0.05	0.10	0.05	0.11*	0.05	0.12**	0.05	0.11*	0.05	0.11**	0.05	0.11*	0.05
Law Enforcement Resources																
DUI Units (% coverage)	--		0.004****^	0.001	0.005****^	0.001	0.007****^	0.001	--		0.002*^	0.001	0.002****^	0.001	0.003****^	0.001
Female Percent of Sworn Officers	--		0.03^	0.02	0.03^	0.02	0.03^	0.02	--		0.05***^	0.02	0.05***^	0.02	0.05***^	0.02
Sworn Officers Rate (per 1000)	--		−0.17*	0.07	−0.18**	0.07	−0.19	0.07	--		−0.18	0.06	−0.20	0.06	−0.21	0.06
Exogenous Factors																
Self-reported Drunk Driving (%)	--		--		−0.007	0.01	−0.005	0.01	--		--		0.009*	0.004	0.008	0.004
Heavy Drinking Prevalence (%)	--		--		0.01**	0.004	0.01**	0.004	--		--		0.005	0.003	0.005	0.003
Interaction Effects																
BAC * DUI Units	--		--		--		−0.004****^	0.001	--		--		--		−0.002^	0.001
Controls																
Unemployment Rate	−0.08****^	0.02	−0.06****^	0.02	−0.07****^	0.02	−0.07****^	0.02	−0.05****^	0.02	−0.04**^	0.02	−0.05**^	0.02	−0.05**^	0.02
% pop 21–24	0.03	0.02	0.02^	0.02	0.02^	0.02	0.03^	0.02	0.05**	0.02	0.04*^	0.02	0.05**^	0.02	0.05****^	0.02

Variable Name	Females					Males			
	Model 1	Model 2	Model 3	Model 4		Model 1	Model 2	Model 3	Model 4
	b	*b*	*b*	*b*		*b*	*b*	*b*	*b*
	SE *b*	**SE** *b*	**SE** *b*	**SE** *b*		**SE** *b*	**SE** *b*	**SE** *b*	**SE** *b*
Constant	5.95	5.78	5.74	5.73		7.82	7.74	7.71	7.70
R^2	0.89	0.90	0.90	0.90		0.89	0.90	0.90	0.90

***
p < .001;

**
p < .01;

*
p < .05;

^
significant sex difference between female and male coefficients

Note: All models include dummy variables for state [n=24 states] and year [1991–2007] (not shown)