Rearrest Rates After Incarceration for DWI: A Comparative Study in a Southwestern US County

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Objectives. This study was undertaken to assess a 28-day detention and treatment program's effect, in a multiethnic county with high rates of alcohol-related arrests and crashes, on first-time offenders sentenced for driving while impaired (DWI).

Methods. We used comparison of baseline characteristics, survival curves of subsequent arrest, and Cox proportional hazards regression to examine probability of rearrest of those sentenced and those not sentenced to the program.

Results. Probability of not being rearrested was significantly higher for the treatment group after adjustment for covariates. At 5 years, probability of not being rearrested for the treatment vs the nontreatment group was 76.6% vs 59.9%.

Conclusions. Results suggest that this county's program has significantly affected rearrest rates for Native Americans, Hispanics, and non-Hispanic Whites. (*Am J Public Health.* 2002;92:1826–1831)

Injuries sustained in motor vehicle crashes involving impaired drivers are among the most significant preventable health care problems in the United States. Since the early 1980s, driving while impaired (DWI) has received substantial public and political attention. Most states have revised laws and established programs directed at detecting, prosecuting, and imposing sanctions on drinking drivers. These measures are designed to deter impaired drivers through education, enhanced perception of risk of apprehension, and punishment.

The programs and policies that have evolved from the deterrence model[1] have resulted in a dramatic increase in the public's perception of impaired driving as an undesirable and risky behavior. Several analyses of policy-related interventions have suggested that for social drinkers, that is, individuals who are capable of making choices about when, what, and how much to drink, rates of alcohol-related crashes and arrests have declined.[2,3] For problem drinkers or substance abusers, however, the choice to avoid driving while in an impaired state is reduced by the nature of their habitual or addictive behavior, and for this reason policy-related interventions may have been less effective. Overall, DWI deterrence policies and legislation appear to have had varying or minimal effect on recidivism rates, depending on the level of drivers' alcohol involvement.

An alternative approach to deterrence based on policy has involved intervention programs intended to educate DWI offenders about the consequences of impaired driving. However, studies in Sacramento[6] and in Edmonton, Alberta,[7] indicate that although knowledge about and attitudes toward impaired driving can be changed, such information-based educational efforts have minimal impact on alcohol consumption and related behaviors.[4,5] Research on victim impact panels (VIPs), in which survivors of the victims in drunk-driving crashes relate their personal experiences to DWI offenders, indicates that this intervention, too, has very limited preventive impact.[8,9]

Comprehensive programs typically employ multiple intervention components: DWI prevention information, a variety of low-intensity therapeutic techniques, action planning to avoid impaired driving, aftercare, and, in some programs, incarceration. Research on these programs has indicated that they reduce DWI recidivism.[10–17] Such programs have been implemented in several locations. One, in Massachusetts, demonstrated a 6% recidivism rate for program participants compared with 25% for all convicted drinking drivers.[18] In Prince George's County, Maryland,[14] incarceration and treatment were combined (clients were assigned 7, 14, or 28 days of detention and treatment, depending on whether they had any prior DWI offenses). The program provided 48 hours of intensive group diagnostic activity, followed by counseling through the 28-day period, and the development of a personalized referral and aftercare plan for the postprogram period. Participants sentenced to the Prince George's County facility demonstrated significantly lower recidivism rates than those not assigned to the program. Differences were most pronounced among first-time offenders, suggesting that this approach was particularly effective in this group.[14]

In a meta-analysis of 215 evaluations of DWI programs of all types, Wells-Parker et al.[19] reported 2 important conclusions. Certain types of interventions had received very little empirical assessment; jail-based programs in particular had been infrequently evaluated. Also, interventions that combined education, counseling, and contact probation or client follow-up were more effective than interventions that included 1 or some combination of 2 of these intervention components.

Finally, none of these programs has specifically targeted Native American populations. Research on alcohol treatment among Native Americans does not indicate much success in treatment outcome.[20] Furthermore, no studies have specifically addressed DWI intervention programs in Native American populations. This article provides preliminary findings from a comprehensive DWI intervention program that includes a high proportion of Native American clients in the treatment cohort.

THE SAN JUAN COUNTY DWI TREATMENT PROGRAM

The program described here is modeled on the earlier program in Prince George's County, Maryland,[14] and involves multiple interventions plus follow-up. Unlike that program, however, this one focuses primarily on first-time DWI offenders, with the expectation

that doing so (i.e., focusing on first-time offenders) should have beneficial effects on DWI rearrest rates. The setting for this program is very different from Prince George's County, and this difference may have a significant impact on the program's effectiveness. The purpose of this article is to examine the recidivism rates of individuals sentenced to the San Juan County Detention and Treatment Program, compared with those of another set of DWI offenders who were not sentenced to the program.

Setting

The program is located in San Juan County, in northwestern New Mexico. The county is largely rural but contains several sizable communities, including Farmington, the county seat, and Shiprock, on the Navajo Indian Reservation. The in-county portion of the Navajo Reservation borders the Jicarilla Apache Reservation in an adjacent New Mexico county as well as a Ute reservation in an adjacent region of southern Colorado. Much of the county's income is derived from oil and gas extraction, with agriculture the second most important revenue source. In 1999, the median family income was estimated at about $30 000. The population was then estimated to be about 110 000, comprised of 39% Native Americans, 14% Hispanics, and 47% non-Hispanic Whites. Other ethnic groups represent a miniscule proportion of the population.

Like many other regions of the mountain West, San Juan County has high rates of alcohol-related motor vehicle crashes. It has the second-highest rate of alcohol-related vehicle fatalities in the United States[21] and has consistently ranked first among New Mexico counties in frequency of repeat DWI offenses and aggravated DWI offenses. In a 1994 report by the San Juan County DWI Solutions Committee, it was estimated that the economic costs of impaired-driving crashes in San Juan County in 1995 would be $94 174 000, a tremendous sum for a rural county in a sparsely populated area. As a response to the high rates of motor vehicle crashes, an innovative treatment program for DWI offenders was opened in San Juan County in 1994, based on the detention and treatment concept developed in Prince George's County.[14]

Intervention Program

The San Juan County DWI Program (SJC-DWI) incarcerates first-time offenders in a minimum-security facility and provides a multicomponent treatment program during incarceration. While incarcerated, offenders receive inpatient treatment, which is designed to be culturally appropriate. For example, Native Americans are offered a sweat lodge (a ceremony of spiritual cleansing held in a small circular lodge heated by fired stones), talking circles (a spiritual ceremony in which an eagle feather is passed around a circle of participants to provide opportunities to speak), and other interventions, such as access to Native American medicine men and church meetings. Caseworkers follow offenders for 6 to 12 months after discharge. The specific treatments of the SJC-DWI include components dealing with alcohol use, abuse, and dependence; health and nutrition; the psychological effects of alcohol abuse; drinking and driving awareness; stress management; goal setting, in which clients devise an action plan for the immediate future; family issues and alcohol; domestic violence; and HIV/AIDS prevention. A work-release program is also available to SJC-DWI clients who are employed. Throughout the program, motivational interviewing techniques are used in client–counselor interactions. Finally, an adjunct Alcoholics Anonymous program is made available to clients.

METHODS

New Mexico driving records for all people arrested for DWI in San Juan County from the inception of the program in August 1994 until the end of March 2001 were obtained from the Division of Government Research of the University of New Mexico, the organization responsible for analyzing these data for the New Mexico Department of Traffic Safety. The data encompassed all events occurring since 1984, as well as age, sex, number of alcohol-related driving offenses, and crash data. The present study deals only with rearrests, comparing offenders that were admitted to the SJC-DWI with offenders who were not.

An additional source of driving arrest information was available for a subset of the treatment population: data from the National Law Enforcement Telecommunications System (NLETS). The NLETS data file is privately maintained for use by law enforcement personnel in rapid checks of arrest and conviction records of suspects. Police agencies in most southwestern states contribute data to this system. Although the extent to which NLETS contains complete data is uncertain, it appears that most DWI convictions from New Mexico are contained in the file. Data representing arrests by tribal police and convictions by tribal courts are not included. Data was obtained by the SJC-DWI Program from NLETS for all drivers who entered treatment between August 1994 and June 2000. The advantage of the NLETS database over the New Mexico database is that it also includes arrest data from the neighboring states of Arizona, Colorado, and Utah. San Juan County is in the Four Corners area of extreme northwestern New Mexico, and many county residents travel regularly to adjacent states.

Outcome Measures and Covariates

The outcome measure of interest was time to subsequent arrest after discharge from the treatment program. An individual who had not been arrested again by March 21, 2001 (or June 30, 2000, with the NLETS data) was considered censored. The covariates we collected from the treatment group respondents included number of arrests before the arrest that led to sentencing to the treatment program (0, 1, 2 or more), age at participation in the treatment program, ethnicity (Native American, non-Hispanic White, or Hispanic), and sex. Blood alcohol levels at the time of arrest were available for 84% of the treatment group and 80% of the nontreatment group.

To evaluate the effectiveness of the treatment program, we also identified a matching nontreatment (control) group consisting of individuals who had been arrested for DWI since August 1, 1994, but who had not been sent to the treatment program. Most of these people were convicted of DWI as a result of that arrest, but some had their cases dismissed or were found not guilty for some other reason. With the exception of ethnicity (for which data were not available), covariates were the same as those for the treatment group. For the nontreatment group, the out-

come variable was defined as the time between an individual's first arrest after August 1, 1994, and a subsequent arrest. Subjects whose records showed no subsequent arrest by March 21, 2001, were censored. Records were examined for the period 1984–2001 to obtain the number of prior arrests for these individuals. Age at first arrest after August 1, 1994, was used as the age variable.

Statistical Analyses

We first compared baseline characteristics such as age, sex, and number of prior arrests for the 2 groups—those who were sentenced to the treatment program compared with those who were arrested for DWI but not sentenced to the program—using a χ^2 test or the Student *t* test, as appropriate. Survival curves for time to subsequent arrest for both groups were then obtained with the Kaplan–Meier method. Finally, Cox proportional hazards regression analyses were conducted to estimate the effect of the treatment program and to adjust for the effects of other covariates. We also conducted Cox proportional hazards regressions, first using only treatment group data to assess the impact of ethnicity on rearrest, and then using only nontreatment group data to compare outcomes of those who had been convicted of DWI and those who had not.

RESULTS

Baseline Characteristics

The age, sex, number of prior DWI arrests, and blood alcohol concentration (BAC) for the treatment and nontreatment groups are shown in part A of Table 1. The nontreatment group was, on average, older than the treatment group. The proportion of people with no prior offenses was slightly greater in the treatment group than in the nontreatment group. BAC was slightly higher in the treatment group. And the proportion of males was somewhat highher in the nontreatment than in the treatment group. In part B of the table, the 2 subgroups of the nontreatment group are compared. Those who were convicted were slightly older and had higher BAC and more prior arrests compared with those who were not.

Next, the Kaplan–Meier method was employed to obtain a survival curve for the time to subsequent arrest for both the treatment and the nontreatment (control) group using data from New Mexico only (Figure 1). The probability of not being rearrested was greater for the treatment than for the nontreatment group. The comparisons of the treatment and control groups using the NLETS and New Mexico data are highly similar.

We then performed a Cox proportional hazards regression analysis to examine the treatment effect and the effects of the covariates sex, age, BAC, and number of prior arrests (Table 2, part A). The regression analysis showed that the treatment program had a hazard ratio of 0.631 for reducing the time to subsequent arrest, after adjustment for age and number of prior arrests, which means that, for a given point in time, a person in the treatment group is only 0.631 as likely as a person in the control group to be arrested, assuming that the treatment group participant had not been arrested. The hazard ratio for age was 0.983, that is, for each additional year of age, the probability of being rearrested was reduced by a factor of 0.983. The hazard ratio for number of prior arrests was 1.700, meaning that a person with 1 prior arrest is 1.700 times more likely to be arrested a second time, compared with a person without a record of prior arrests. The same can be said about a person with 2 or more prior arrests, compared with a person with 1 prior arrest. The hazard ratio for female sex was 0.883, which means that women are 0.883 times as likely as men to be rearrested, but this number was not statistically significant. We repeated the analysis, this time including only those individuals for whom BAC was available (data not displayed). The hazard ratio for an increase of 0.1% in BAC was 1.323 (95% confidence interval [CI]=1.198,

TABLE 1—Age, Sex, Ethnicity, and Number of Prior Arrests of Treatment and Nontreatment Groups, by Treatment and Conviction Status

	A. Treatment vs nontreatment		
	Treatment	Nontreatment	*P* value
% Male	77.7	82.5	<.0001
Mean age, y (SD)	31.4 (9.2)	34.3 (10.8)	<.0001
BAC (%) (SD)	0.18 (0.05)	0.17 (0.06)	<.0001
No. of prior arrests, %			<.0001
0	68.2	62.0	
1	20.6	15.0	
≥2	11.2	23.0	
Ethnicity, %			
Native American	70.5	NA	
Hispanic	10.9	NA	
Non-Hispanic White	18.1	NA	
Total, n	3069	3502	
	B. Within nontreatment group, convicted vs nonconvicted		
	Convicted	Nonconvicted	*P*
% Male	83.1	81.2	.19
Mean age, y (SD)	34.8 (10.3)	33.3 (11.8)	.0003
BAC (%) (SD)	0.18 (0.05)	0.15 (0.06)	<.0001
No. of prior arrests, %			<.0001
0	57.0	73.7	
1	15.8	13.1	
≥2	27.2	13.2	
Total, n	2457	1046	

Note. SD = standard deviation; BAC = blood alcohol concentration; NA = not applicable.

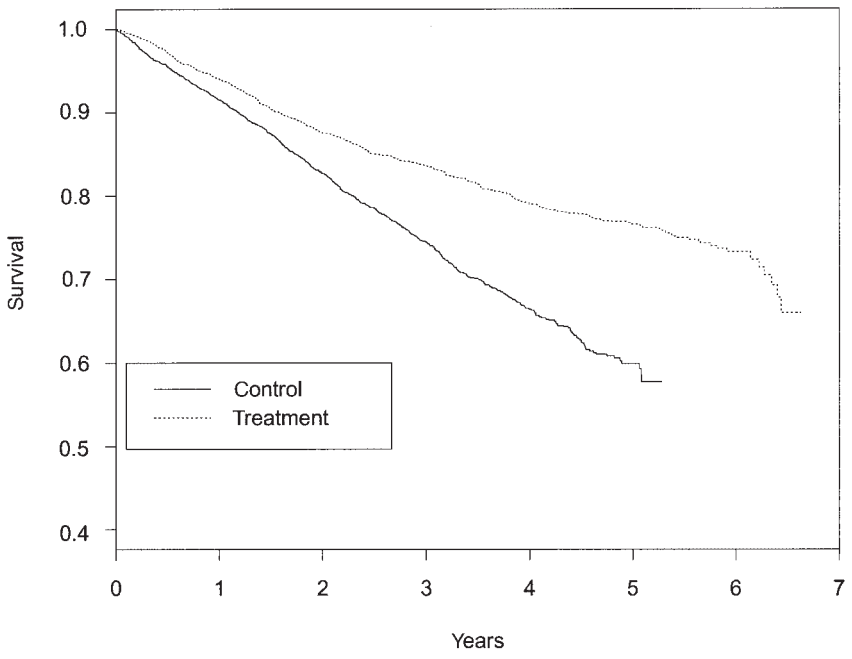

FIGURE 1—Probability of not being re-arrested for DWI.

TABLE 2—Cox Regression Analysis of Rearrest on Treatment Status, Age, Number of Prior Arrests, and Sex

Variable	Hazard Ratio	95% CI
A. State of New Mexico arrest data only		
Treatment status	0.631	0.567, 0.702
Age	0.983	0.978, 0.988
No. of prior arrests	1.700	1.602, 1.803
Female sex	0.883	0.768, 1.014
B. NLETS data for treatment group and State of New Mexico data for nontreatment group		
Treatment status	0.658	0.588, 0.735
Age	0.980	0.974, 0.985
No. of prior arrests	1.660	1.562, 1.764
Female sex	0.906	0.785, 1.046

Note. CI = confidence interval; NLETS = National Law Enforcement Telecommunications System.

TABLE 3—Cox Regression Analysis of Rearrest on Age, Sex, Number of Prior Arrests, and Ethnicity, for Treatment Group Only

Variable	Hazard Ratio	95% CI
A. State of New Mexico data		
Age	0.983	0.973, 0.993
Ethnicity 1	0.801	0.638, 1.006
Ethnicity 2	0.753	0.565, 1.002
Sex	0.853	0.690, 1.055
No. of prior arrests	1.584	1.421, 1.765
B. NLETS data only		
Age	0.972	0.961, 0.983
Ethnicity 1	0.636	0.483, 0.838
Ethnicity 2	0.693	0.512, 0.937
Sex	0.919	0.728, 1.159
No. of prior arrests	1.391	1.231, 1.571

Note. Ethnicity 1 compares non-Hispanic White with Native American; ethnicity 2 compares Hispanic with Native American; sex compares females with males. CI = confidence interval; NLETS = National Law Enforcement Telecommunications System.

1.462), indicating that BAC is a significant predictor of rearrest. None of the other covariates changed in significance. The analysis in Table 2, part B, which uses NLETS data for the treatment group, is virtually identical to the analysis in Table 2, part A.

In the second set of analyses, a separate Cox proportional hazards regression was performed for the treatment group only to examine the effects of ethnicity, age, sex, BAC, and number of prior arrests (Table 3, part A). With the New Mexico data, the hazard ratio for age was 0.983 (the same as in the previous analysis). The hazard ratio was 0.801 for non-Hispanic Whites compared with Native Americans and 0.753 for Hispanics compared with Native Americans. Female sex had a hazard ratio of 0.853 compared with male sex. The hazard ratios for ethnicity and for female sex were not statistically significant. Number of previous arrests had a hazard ratio of 1.583. The only significant covariates were age and number of prior arrests. In a separate analysis (not displayed) that included only those people for whom BAC was available, the results remained essentially the same but in addition BAC was a significant predictor of rearrest. The hazard ratio was 1.259 (95% CI= 1.061, 1.494).

The results of the analysis in Table 3, part B, which used the NLETS data, are essentially the same as those of the analysis in part A, with the striking exception of ethnicity. The hazard ratios for Hispanics compared with Native Americans and for non-Hispanic Whites compared with Native Americans are substantially smaller in this analysis than in the one above, and both are statistically significant. This finding suggests that when arrests in neighboring states are included in the analysis, Native Americans have substantially more rearrests than do non-Native Americans. When we repeated the analysis with the NLETS data for those people for whom BAC was available, BAC was not significant, and the difference between rearrests of Hispanics and Native Americans also became nonsignificant.

In the third set of analyses, we used only data from the nontreatment group to assess the impact of conviction or nonconviction for DWI on subsequent rearrest. The comparisons of the 2 groups are shown in Table 1, part B. In a Cox proportional hazards regression analysis (data not shown) of rearrest onto the covariates displayed in Table 1, part B, number of prior arrests (1.768; 95% CI= 1.644, 1.902) and age (0.984; 95% CI= 0.977, 0.990) were the only significant predictors of rearrest. Most notably, conviction did not predict subsequent rearrest. When only people for whom BAC was available were analyzed, the results remained the same,

but BAC was also significant. The hazard ratio was 1.354 (95% CI=1.193, 1.536).

DISCUSSION

Two major limitations apply to the data used in these analyses. Assignment to the treatment and nontreatment groups was not random, and our ability to adjust for variables that might have influenced assignment was limited at best. Thus, we are not able to assert with certainty that the treatment program is in fact responsible for the increased probability of not being rearrested, although there is good reason to think that is in fact the case. In particular, we do not know if the distribution by ethnicity varies between the 2 groups. Almost 70% of people who have completed the treatment program are Native Americans, and their rearrest rate is higher than that of Hispanics and non-Hispanic Whites. However, it is unlikely that the difference in rearrest rates between the 2 groups could be accounted for by a percentage of Native Americans that would be >70% in the nontreatment group. Indeed, it seems likely that a higher proportion of non-Native Americans are to be found in the nontreatment group. There are at least 2 reasons for making this claim.[1] Among people who served time for DWI convictions in the San Juan County Jail between 1995 and the end of 2000, the proportion who were Native American was, for first, second, and third or more offenses, 59.3%, 67%, and 70.9%, respectively.[2] Observation in courts as well as interviews with local court personnel indicate that people who are arrested but not convicted for DWI are often those who can afford a lawyer, and relatively few of these individuals are Native Americans. Thus, it is unlikely that the nontreatment group contains a higher proportion of Native Americans than the treatment group. Therefore, ethnic composition is unlikely to explain the different outcomes in the 2 groups.

Additionally, data for comparison of the treatment and nontreatment groups come from the State of New Mexico. Data from the adjacent states were available for only a subset of the treatment group. The results suggest, however, that using only the New Mexico data did not distort the results dramatically, with 1 exception: The probability of rearrest was substantially greater for Native Americans when data from other states were used. Moreover, because the NLETS data did not include arrests by tribal police departments on reservations, it is likely that the rearrest rate for this group is even higher than we have observed. Nonetheless, because all of the evidence currently available suggests that the proportion of Native Americans is, if anything, greater in the treatment than the nontreatment group, there is good reason to believe that at least the same degree of underreporting would affect the nontreatment and treatment groups equally.

Despite these deficiencies in the data, our results suggest that the SJC-DWI is having a significant effect on DWI rearrest rates. Indeed, at 5 years the probability of not being rearrested (using the New Mexico data) was 76.6% for the treatment group compared with 59.9% for the nontreatment group. This difference, about 17%, is substantially higher than the average effects (8%–9%) observed across all types of DWI interventions in the meta-analysis reported by Wells-Parker et al.[19]

There are several important implications of the present results, if it is accepted that they are in fact due to the impact of the SJC-DWI. This program, as noted earlier, has been designed for first-time offenders, although many multiple offenders have also been sentenced in San Juan County. These results may indicate just how important it is to focus prevention efforts early in an individual's DWI offense history, rather than waiting until subsequent offenses occur. A 28-day incarceration and treatment program may sound particularly severe for a first-time DWI offense, but compared with the stringency of legal consequences for DWI in other countries (e.g., in some Scandinavian nations the driver's license is permanently revoked), a program that incarcerates and treats offenders simultaneously seems less harsh. It is especially noteworthy that the climate of the SJC-DWI is not particularly penal in nature: It is a minimum-security program designed solely for DWI offenders.

Notably, in the nontreatment group, conviction or nonconviction after an arrest for DWI was not predictive of rearrest. Both groups had significantly higher rearrest rates than the treatment group. This observation suggests that being sentenced to a program such as the one we have studied is more effective in preventing rearrests than being convicted and sentenced to some other facility, such as the county jail, or not being convicted at all.

Clearly, Native Americans are at greater risk of arrest and rearrest for DWI than are members of other groups. Nonetheless, it is important to emphasize that a program of this type appears to be effective for all groups. In a region where alcohol is such an important cause of death and disability, these results give some reason to believe that the problem is not unsolvable. ■

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S.J. Kunitz and W.G. Woodall contributed text to the article and aided in the analyses. W.G. Woodall contributed text and aided in the analyses. H. Zhao produced the statistical analyses under the direction of the first and second authors. D.R. Wheeler aided in data collection and database management and contributed text to the article. R. Lillis contributed text and expertise relevant to traffic safety research and data. E.M. Rogers contributed text and editorial assistance.

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Human Participant Protection

All data used in this study are public records; therefore, informed consent was not required. Study procedures were reviewed and approved by the institutional review boards of the University of New Mexico, the University of Rochester, the Indian Health Service, and the Navajo Nation.

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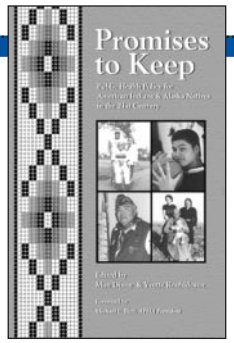

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