Risk of Alcohol-Impaired Driving Recidivism Among First Offenders and Multiple Offenders

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Objectives. We sought to determine the statewide impact of having prior alcohol-impaired driving violations of any type on the rate of first occurrence or recidivism among drivers with 0, 1, 2, or 3 or more prior violations in Maryland.

Methods. We analyzed more than 100 million driver records from 1973 to 2004 and classified all Maryland drivers into 4 groups: those with 0, 1, 2, or 3 or more prior violations. The violation rates for approximately 21 million drivers in these 4 groups were compared for the study period 1999 to 2004.

Results. On average, there were 3.4, 24.3, 35.9, and 50.8 violations per 1000 drivers a year among those with 0, 1, 2, or 3 or more priors, respectively. The relative risks for men compared with women among these groups of drivers were 3.8, 1.2, 1.0, and 1.0, respectively.

Conclusions. The recidivism rate among first offenders more closely resembles that of second offenders than of nonoffenders. Men and women are at equal risk of recidivating once they have had a first violation documented. Any alcohol-impaired driving violation, not just convictions, is a marker for future recidivism. (*Am J Public Health.* 2010;100:919–924. doi:10.2105/AJPH.2008.154575)

Efforts at reducing the consequences of drinking and driving have met with some success over the last 2 decades. However, in spite of tougher laws, increased enforcement, and greater public awareness, the presence of persistent drinking drivers on US roadways continues to be a major public health problem. All 50 states and the District of Columbia have *per se* laws, which make it a criminal offense to drive with a blood alcohol concentration at or greater than 0.08%.[1] A conviction for alcohol-impaired driving traditionally results in a license suspension or revocation as well as other sanctions ordered by the judiciary. Because states consider driving a privilege and not a right, as a condition of licensure, a person is presumed to consent to chemical testing upon arrest for alcohol-impaired driving.[2] In addition to criminal proceedings, in 41 states (including Maryland) and the District of Columbia, a driver is subject to administrative license suspension (administrative *per se*; APS) for failing or refusing the chemical test.[3] APS laws allow enforcement, acting in an administrative capacity at arrest, to immediately suspend or revoke the license of a driver independent of criminal proceedings. As a deterrent, APS laws enhance the certainty, celerity, and severity of sanctions for alcohol-impaired driving, something not always obtainable by the criminal justice system.[4] Criminal prosecution for the violation follows APS; however, sanctioning drivers under both mechanisms is not considered double jeopardy under constitutional law.

Following a criminal conviction, at least 22 states have diversion programs that allow convicted drinking drivers to ultimately escape criminal sanctions by entering alcohol education, alcohol treatment, or other programs that permit judgment or prosecution to be deferred.[5]

Diversion programs generally lead to dismissal of a conviction after successful completion of the program by the offender and can prevent or delay the offense from appearing on an offender's public driving record. For example, in Maryland, a conviction leading to a diversion program (i.e., probation before judgment) is documented in a segregated (i.e., isolated) record that is not available to the public or insurance companies as part of the person's driver record.

Alcohol-impaired driving legislation and sanctions have historically targeted offenders with multiple convictions. Less attention has been paid to so-called first offenders (those with no prior history of an alcohol-impaired driving conviction on their public driving record), and this limited focus has been on those actually convicted for driving while intoxicated (DWI) or driving under the influence (DUI). APS penalties mandated under *per se* regulations for failing the breath alcohol test (APS failure) or refusing the breath alcohol test (APS refusal) and probation before judgment are often excluded from alcohol-impaired driving statistics. This narrow focus only on convictions thus underestimates the prevalence of alcohol-impaired driving.

It is a widely held belief among the legislative and judicial branches of state government that most first offenders criminally convicted of an alcohol-related traffic offense are overindulging "social drinkers" who may have had only a single isolated drinking and driving episode that resulted in arrest. This belief often translates into lighter sanctions for first offenders.[6] For example, drivers who are perceived to be first offenders are more often granted probation,[7,8] are less likely to receive jail sentences,[7] and are more likely to receive education[9] for a conviction than are multiple offenders. Moreover, the general perception of the first-time offender is someone who is not a problem drinker, is generally law abiding, can be reasoned with, and only needs education.[6] These assumptions may help to explain the lighter sanctions afforded first offenders. However, they appear to be inconsistent with published estimates that a person can drive while impaired by alcohol 200 to 2000 times before being arrested once[10–15] and empirical evidence suggesting that many so-called first-time alcohol-impaired drivers are problem drinkers[16] and are unlikely to be reformed through educational interventions.[6]

In a literature review sponsored by the National Highway Traffic Safety Administration, Jones and Lacey[17] concluded that first and multiple DWI offenders share many similar characteristics and that a number of studies could not distinguish the characteristics of first from multiple offenders.[7,16,18–22]

Despite empirical evidence that the first documented alcohol-impaired driving conviction on a public driving record is often not the first occurrence,[23] offenders who are convicted for the first time are commonly afforded light sanctions. Some arrested or convicted drivers manage to have their driver records completely expunged, and many state motor vehicle administration offices routinely purge driving records after a set number of years.[24] In some states, including Maryland, evidence that a driver received a conviction and diversion program is held as a segregated or sealed record and may be excluded from the driver record upon successful completion of program requirements. Moreover, some DUI offenders receive administrative sanctions but are not convicted criminally, and others may have their charges reduced to a lesser or nonalcohol-related offense through plea bargaining. Given these factors, combined with the low probability of arrest, it is reasonable to assume that the typical so-called first-time offender will have had an extensive history of alcohol-impaired driving by the time an offense is documented in the state's department of motor vehicles or criminal record systems.[25]

In addition to the lighter judicial and legislative sanctions afforded those offenders apprehended for a "first" offense, a closer look at recidivism rates of DUI offenders with nominally 1, 2, or even 3 or more documented arrests is warranted because, in reality, such drivers may in fact have regularly engaged in drinking and driving without developing a documented conviction record, as a consequence of at least 6 factors: (1) having a low probability of arrest, (2) states' practice of expunging or purging driver records, (3) plea bargaining to lesser offenses, (4) offenders receiving administrative sanctions but not criminal convictions, (5) states' using segregated driver records, and (6) excluding alcohol-related violations from official records among diversion-program participants. Thus, criminal and administrative records commonly used to evaluate risk for recidivism underrepresent the actual violations among the drinking and driving population.

We sought to compare the risks of committing a new alcohol-impaired traffic offense (of any type) among drivers with 0, 1, 2, or 3 or more prior violations. Specifically, we were interested in determining whether the risk (rate) of new offenses among drivers who had a single prior violation was closer to the risk for multiple offenders or to drivers with no prior alcohol-related offenses.

METHODS

We analyzed 1999 to 2004 data on all drivers in the State of Maryland to investigate the statewide alcohol-impaired driving rate among drivers who had 0, 1, 2, or 3 or more prior violations between 1973 and 2004. Because criminal records do not adequately account for all instances of alcohol-related violations, rates based only on criminal convictions would underestimate the true incidence. Therefore, for purposes of this study and to gain a better understanding of the effect of alcohol-related violations on subsequent offenses, we defined violations more inclusively and incorporated all offenses that resulted in a conviction or *nolo contendere* plea with or without probation before judgment, and also sanctions for APS failure or APS refusal. (On October 1, 2001, Maryland lowered the legal *per se* limit from 0.10% to 0.08%.) Specifically, we included stand-alone APS sanctions, APS sanctions linked to convictions with or without probation before judgment, and convictions (absent APS sanctions) with or without probation before judgment. These violations are hereafter referred to as violations, offenses, or priors. Inclusion of all recorded violations more accurately determines the true extent to which driver histories impact the risk of future violations.

All data were provided by the Maryland Motor Vehicle Administration. Because probation before judgments are maintained by the MVA as a segregated record, those records were also obtained. Analyses were restricted to all drivers in the State of Maryland who were included in the Maryland driver license record or segregated files between January 1, 1999, and December 31, 2004. All offenses from 1973 to 2004 were counted among the prior violations. Possibly because of administrative or procedural factors, conviction counts prior to 1973 were small. Therefore, disregarding alcohol-related events prior to 1973, which occurred 26 or more years before the study period began, was unlikely to significantly affect the results. Drivers who were deceased or had moved from the state were excluded from the analysis. Records were also removed if the driver's license had expired 6 or more months before December 31, 2004, and had not been renewed. For many drivers, multiple APS, conviction, and probation before judgment records were found for the same date of a violation, and these duplicates were removed from the database.

The rates we report are based on more than 21 million driver records extracted from the Maryland driver record database in May 2006, which has an annual average driver count of 3 584 114. It can take 18 months or more for cases to work their way through the administrative and judicial systems and reach a final adjudication.[26] We used the May 2006 data extract to allow time for essentially all offenses occurring at the end of 2004 to be processed and reach a final adjudication.

To investigate the impact of prior violations of any type on rates of recidivism or first violation, we tabulated the number of Maryland drivers, the number of alcohol-impaired violations, and the rate of violations per 1000 drivers by the number of prior violations (0, 1, 2, ≥3) and calendar year (1999–2004). Because these were statewide totals for a very large population, statistical tests were not necessary. Because even very small differences would be statistically significant, we performed no tests.

To examine the association between violations and demographic characteristics, average age was computed for each year of study by the number of prior violations. Gender effects were also investigated by calculating the proportion of female drivers by year and number of prior violations. Summary statistics were computed for the number of drivers, driver age, and gender at the middle of each calendar year (June 30). The number of drivers, violations, and rate of violations per 1000 drivers by number of prior violations over the 6-year study period were also analyzed separately for men and women. Finally, the relative risk of a violation was investigated, by gender and number of prior violations.

RESULTS

Table 1 displays the violation rate per 1000 drivers and the count of drivers for calendar years 1999 to 2004, by number of prior violations. The number of drivers in Maryland

TABLE 1—Rate of Violations Per 1000 Drivers, by Number of Prior Violations and Year: Maryland, 1999–2004

No. of Prior Violations	1999, Rate (No. of Drivers)	2000, Rate (No. of Drivers)	2001, Rate (No. of Drivers)	2002, Rate (No. of Drivers)	2003, Rate (No. of Drivers)	2004, Rate (No. of Drivers)	1999–2004, Rate (No. of Drivers)
0	3.6 (3 020 140)	3.5 (3 123 887)	3.3 (3 246 919)	3.3 (3 373 833)	3.3 (3 500 238)	3.4 (3 624 772)	3.4 (19 889 789)
1	28.0 (159 766)	26.7 (166 439)	23.9 (173 149)	23.6 (180 067)	22.3 (186 967)	22.1 (194 671)	24.3 (1 061 059)
2	42.5 (48 758)	40.2 (51 228)	35.7 (53 566)	34.5 (55 738)	33.1 (58 030)	30.8 (60 358)	35.9 (327 678)
≥3	62.8 (32 751)	60.9 (34 804)	52.1 (36 796)	46.6 (38 700)	45.1 (40 576)	41.8 (42 533)	50.8 (226 160)
All	6.0 (3 261 415)	5.8 (3 376 358)	5.3 (3 510 430)	5.2 (3 648 338)	5.2 (3 785 811)	5.0 (3 922 334)	5.4 (21 504 686)

increased by 20.3% during the study period, from about 3.26 million drivers in 1999 to about 3.92 million drivers in 2004. For the year 2004, more than 3.62 million drivers (92.4%) had no history of a violation; 194 671 drivers (5.0%) had 1 prior violation; 60 358 drivers (1.5%) had 2 prior violations; and 42 533 drivers (1.1%) had 3 or more prior violations.

The rate of violations per 1000 drivers declined over the study period, regardless of the offenders' prior violations. For each category of offenders who had prior violations, the decreases in rates of recidivism dropped consistently year by year.

The rate differences also depended on the number of prior violations. The size of reductions over time increased as the number of prior offenses increased. Specifically, rates declined, respectively, by 0.2, 5.9, 11.7, and 21.0 violations among drivers with 0, 1, 2, or 3 or more prior violations. These rate reductions represent changes in the absolute number of violations per 1000 drivers. Expressed in relative terms, new violation rates were found to decline between 1999 and 2004, respectively, by 5.6%, 21.1%, 27.5%, and 33.4% for drivers with 0, 1, 2, and 3 or more prior violations.

Over the entire 6-year study period, there were, on average, 5.4 violations per 1000 Maryland drivers. Among drivers with no prior offenses, there was an average of 3.4 new first-time offenders a year per 1000 drivers. Among drivers with 1, 2, and 3 or more priors, the comparable rates of new offenses were, respectively, 24.3, 35.9, and 50.8. Thus, the magnitude of risk increased substantially as the number of prior offenses increased.

Table 2 displays the number of violations by number of prior violations and year. The total number of violations per year increased 3.6%, from 19 594 in 1999 to 20 300 in 2004. Of the 20 300 violations that occurred in 2004, 12 359 (60.9%) were committed by drivers who had no prior violations, 4306 (21.2%) by drivers who had 1 prior violation, 1859 (9.2%) by those who had 2 prior violations, and 1776 (8.7%) by those with 3 or more prior violations. The 3.6% increase in violations over the study period is substantially lower than the increase in the percentage of Maryland drivers during the same period (20.3%).

On average, the annual rate of a subsequent violation was 7.15 times higher among drivers with 1 prior than among drivers with no prior violations, which means that the rate of a subsequent violation was increased 615% by the first violation. Furthermore, we found that, compared with drivers with no prior violation, the rate of committing a new violation was 10.6 times greater for drivers with 2 prior violations and 14.9 times greater for drivers with 3 or more prior violations. Remarkably, the second and third or higher prior violations still increased the rate of a subsequent violation, but not as dramatically as did the first; the second prior violation increased the rate of recidivism by 48% over the first, and the third or higher by 42% over the second.

The average age of drivers varied little between 1999 and 2004. Over the 6 years, drivers had an average age of 42 years. Those with 0, 1, 2, and 3 or more prior violations had average ages, respectively, of 43, 33, 35, and 35. Clearly, drivers with repeat alcohol offenses were younger on average than were drivers without such an offense.

The proportion of female drivers also varied little between 1999 and 2004. However, their proportion decreased dramatically with increasing counts of prior violations. Women accounted for 51%, 18%, 13%, and 8% of the drivers with 0, 1, 2, and 3 or more prior violations, respectively. The male to female ratio of violation rates also decreased with increasing prior counts (Table 3).

During 1999 through 2004, the overall rate of being arrested for alcohol-impaired driving among men (8.7 per year per 1000 drivers) exceeded the comparable rate among women (2.0 per year per 1000 drivers) by a factor of 4.3. Among drivers with no previous violations, the relative risk (defined here as the ratio of the rates being compared) of a first violation was 3.9 times higher for men than it was for women. However, after a first violation, the relative risk of a subsequent offense was similar among men and women, regardless of the number of prior violations. The risk for men relative to women was 1.2 for drivers with 1 prior violation, 1.0 for drivers with 2 prior violations, and 1.0 for drivers with 3 or more prior violations.

Compared to drivers with no prior violation, the rate of committing a new violation was 4.6 times higher for men and 15.0 times higher for women among drivers with 1 prior violation, 6.6 times higher for men and 25.1 times higher for women among drivers with 2 prior violations, and 9.3 times higher for men and 36.8 times higher for women with 3 or more prior violations. In other words, compared with the "baseline risk" of a first violation, the risk of a subsequent violation was strikingly higher among women than among men regardless of the number of prior violations, but, as just described, this was because of the low risk of a first violation among women compared with men.

DISCUSSION

Legislators and the judiciary have traditionally attempted to deter alcohol-impaired driving using criminal prosecution, as reflected in

TABLE 2—Number of Violations, by Number of Prior Violations and Year: Maryland, 1999–2004

No. of Prior Violations	1999, No.	2000, No.	2001, No.	2002, No.	2003, No.	2004, No.	1999–2004, No.
0	10 985	11 075	10 649	11 161	11 596	12 359	67 825
1	4 479	4 441	4 140	4 245	4 167	4 306	25 778
2	2 073	2 060	1 912	1 925	1 922	1 859	11 751
≥3	2 057	2 118	1 918	1 803	1 828	1 776	11 500
All	19 594	19 694	18 619	19 134	19 513	20 300	116 854

state statutes and practices. A natural result of this approach has been to focus on convictions in describing and addressing the problem. Although this criminal approach affords a defendant due process, it also allows for multiple opportunities to legally thwart the deterrent intent. Documentation of prior alcohol-impaired driving violations may be missing because driver records are expunged or eventually purged. In a study of DWI arrests and convictions, the duration of recordkeeping among 5 states ranged from only 5 to 30 years.[23,25] Assignment to a diversion program may also negate the conviction or make it inaccessible as a public record.

In part because of mounting concerns with the certainty, celerity, and severity of sanctions for alcohol-impaired driving, most states have implemented administrative *per se* laws that allow an immediate license suspension by enforcement in what used to be a strictly judicial function.[4] Regardless of the outcome in criminal proceedings, an alcohol-impaired driver receives an immediate sanction under administrative *per se* with little chance to thwart that part of the system.

Although *per se* laws have ameliorated the problem to some extent, for deterrence to work, an alcohol-impaired driver has to believe that he or she will be arrested, convicted, and sanctioned for a violation. The low probability of arrest for alcohol-impaired driving makes it difficult for laws and sanctions, no matter how severe, to have a deterrent effect on driving behavior. Although such drivers may not know the exact probability of arrest, they do know, in part from their own experience, that it is low, because they likely have driven alcohol-impaired numerous times before being arrested once. Even when stopped by police, drinking drivers may not be arrested for alcohol-impaired driving. In a study of sobriety checkpoints conducted in 1984, officers missed 55% of drivers with a breath alcohol concentration at or greater than 0.10% and 76% of drivers with a breath alcohol concentration between 0.05% and 0.099%[27] In a 1993 replication study, officers missed 45% of drivers with a breath alcohol concentration at or greater than 0.10% and 74% of drivers with a breath alcohol concentration between 0.05% and 0.099%.[28]

TABLE 3—Number of Drivers, Violations, and Rates of Violations Per 1000 Drivers, by Gender and Prior Violations: Maryland, 1999–2004

	Men			Women		
No. of Prior Violations	Drivers, No.	Arrests, No.	Rate per 1000 Drivers	Drivers, No.	Arrests, No.	Rate per 1000 Drivers
0	9 637 319	52 996	5.5	10 144 757	14 536	1.4
1	855 546	21 679	25.3	192 681	4 055	21.0
2	284 492	10 281	36.1	41 412	1 458	35.2
≥3	207 294	10 550	50.9	18 424	949	51.5
All	10 984 651	95 506	8.7	10 397 274	20 998	2.0

Note. Total number of drivers differs slightly because of missing values for gender.

Of the 8 possible ways a driver can be sanctioned administratively, criminally, or through a diversion program, only 3 result in a final adjudication of conviction. Thus, focusing public policy on convictions underestimates the true prevalence of alcohol-impaired driving. Among drivers who are finally apprehended and convicted, our findings call into question the state policies that allow the segregation, expungement, and purging of alcohol-impaired driving histories and the lenient sanctions that so-called first offenders often receive from the judiciary.[7–9,29] In a survey of respondents participating in DUI courts, over 80% said they would have been less likely to recidivate if their sanctions for a first offense had been more severe.[5]

Despite driver records and policies that underestimate the true prevalence, one thing is certain: all multiple offenders were at some point first offenders. Although associations between 1 or more prior convictions and future recidivism is well documented,[9,17,30,31] our findings demonstrate the significance of any first arrest in terms of risk of recidivism, including those resulting in final administrative or diversion sanctions. Clearly, an annual recidivism rate of 24.3 per 1000 among first offenders should not be taken lightly.

Similar to other research,[18,32–35] we found that men were 4 times more likely than were women to have a first violation. However, once women incurred an alcohol-impaired driving offense, men and women were at a similar risk of recidivating. Beginning in the late 1970s, women have been overrepresented in DUI arrests relative to their actual alcohol-impaired driving, suggesting an increased vulnerability to arrest.[34,36,37] More stringent laws and enhanced enforcement targeting less intoxicated offenders may have differentially influenced women's arrest patterns,[34,36,37] and there is evidence that intoxication among women ages 21 to 50 who drink increased from 1981 to at least 2001.[38]

Despite efforts to reduce drinking and driving, the behavior persists and goes largely undetected and, even when detected, it may be

only partially documented. Such reduced documentation is often due to procedures that focus exclusively on criminal sanctions and permit expungement, segregation, or purging of violation histories. The findings we present, along with those from 4 companion papers,[39–42] suggest that drivers who commit an alcohol-related violation of any type are at increased risk of a subsequent offense. No history of an alcohol-impaired driving violation, whether handled through administrative procedures, the criminal justice system, or a diversion program, should be expunged, purged, or segregated from a driver's record. Any violation, not just convictions, should be considered by the judiciary, state motor vehicle departments, medical advisory boards, state legislators, public health officials, and physicians as both a medical and a recidivism risk marker. Clearly, it would be unwise to remove evidence of cancer from a patient's medical records after a set number of years, and we believe that it is just as unwise to remove evidence for prior alcohol-related violations from a person's driving history. Yet, current public health policy allows this practice.

Public health policy should encourage the classification of first (and multiple) offenders using a broad, all-inclusive definition of alcohol-related offenses, instead of the narrow "criminal" definitions routinely used by state licensing agencies, state legislators, the judiciary, and public health policy analysts. Any alcohol-impairment driving violation should be permanently recorded on the driver record, serve as a risk factor for future recidivism, and affect sentencing dispositions. State record systems for tracking alcohol-impaired driving should reflect this fact. Once offenders are properly identified, early intervention, treatment, and appropriate sanctions can better target those at increased risk for future alcohol-impaired driving. ■

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Contributors

All authors contributed significantly to the conception, analysis, and interpretation of the findings, the writing of the article, and approval of the final version. W.J. Rauch and P.L. Zador developed the study concept and design. W.J. Rauch secured the cooperation of Maryland's Motor Vehicle Administration and served as the principal investigator. W.J. Rauch and P.L. Zador conducted the primary statistical analysis with input from E.M. Ahlin, J.M. Howard, and K.C. Frissell. G.D. Duncan served as the senior systems analyst and programmer.

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Human Participant Protection

The use of human participants in this project was approved by the institutional review board of Westat.

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