
Drunken Driving, Hit-and-Runs, and Bribery

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THE PROBLEM of drunken driving and how to control it has been the focus of much attention in recent years. Public interest groups have embarked on campaigns to educate us about the risks of drinking and driving. Television commercials tell us to appoint a “designated driver” if we go out to drink. Many states have passed tough new laws against driving while intoxicated (DWI). Yet drunken driving persists.

At the core of the problem is the decision-making process of drinking drivers, and the government’s ability to influence it. In this paper, we present evidence bearing directly on the determinants of drunken driving. Using data from the state of Ohio, which recently toughened its drunken-driving laws, we tested the hypothesis that drivers respond to the incentives inherent in legal sanctions, even after they have been drinking. The data show that increasing the penalties for DWI had its intended effect: it resulted in less drunken driving. At the same time, however, the data indicate that stiffer penalties induced more drunken drivers involved in accidents to leave the scene of the accident. Also, we found some evidence that drunken drivers were more likely

to offer bribes to avoid arrest under the tougher DWI law.

The evidence appears to confirm our theory that drinking drivers—even when drunk—respond predictably to incentives. This is encouraging news: it means that carefully structured regulations, with properly designed incentives, can be effective in reducing drunken driving.

Ohio’s DWI Law

Before Ohio toughened its DWI law in 1983, an individual operating a vehicle with a blood alcohol concentration of 0.10 percent or more (by weight) was *presumed* to be under the influence of alcohol. Since a driver’s blood alcohol concentration merely created a presumption, the prosecutor usually needed additional evidence to obtain a conviction. This often took the form of testimony from the arresting officer as to the defendant’s performance on the “field test” of speech, balance, hand-to-eye coordination, and the like. By the same token, the defendant could attempt to refute this evidence. He could, for example, claim that dental work, a sprained ankle, or an ear infection was the true cause of the field test failure and be found not guilty by a jury.

The contestability of this “presumption,” combined with overcrowded court dockets and a shortage of jail cells, put pressure on prosecutors to plea bargain DWI charges to lesser offenses.

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Under this law, Ohio's DWI conviction rate declined from 50 percent in 1979 to 39 percent in 1982. Over the same period, the percentage of traffic deaths related to alcohol, initially 36 percent, climbed to 42 percent.

A study group on alcohol-impaired driving appointed by Governor Rhodes in 1981 attributed these trends to the nature of Ohio's DWI law and the way it was being enforced. As the study group noted, there was a considerable amount of judicial discretion in the way penalties were enforced. Mandatory penalties, such as minimum jail sentences for DWI convictions, were sometimes ignored. The likelihood and severity of penalties varied not only with the judge (these laws are enforced at the county level) but also with the circumstances surrounding the arrest. Heavier penalties were imposed on those who refused to submit to a blood-alcohol concentration test, tested at higher concentrations, were involved in serious accidents (especially those resulting in injury or death), or had prior DWI convictions. Those who did not fall into any of the above categories were very likely to succeed in plea bargaining the DWI charge to a lesser one such as reckless operation of a vehicle or improper vehicle control. Penalties for these offenses typically involved fines, and perhaps a license suspension, but nothing more. Jail sentences could be avoided completely.

Effective March 16, 1983, Ohio amended its DWI law to make driving with a blood alcohol concentration of 0.10 percent or more a *per se* violation, regardless of other evidence. The rebuttable presumption of guilt was removed. Assuming no coincident decrease in the probability of arrest, this change in the law increased the expected cost of DWI. It did so by reducing the likelihood of a successful plea bargain, and thus increasing the probability that an arrest would result in a DWI conviction. The increase in cost was greatest for those who were most likely to plea bargain under the old law, typically first offenders whose blood alcohol concentration was no greater than 0.15 percent.

Rational Responses to the New Law

Drinking drivers who wish to avoid the legal penalties associated with DWI can respond to the new law in several ways. One option is to drink less before driving. Another is to drive less, or to drive more carefully, after drinking. Both of

these choices will reduce erratic driving and thus the likelihood of arrest. These two choices, and their effects on accident rates, have been the focus of attention by researchers in the field. However, there are two other alternatives available to a drunken driver who is involved in an accident. He can leave the scene of the accident before the police arrive, or he can bribe the other driver not to report the accident or to delay reporting it until he has had time to sober up. Both of these choices have obvious costs associated with them. Nevertheless, higher DWI costs enhance the attractions of these options.

Accidents involving successful hit-and-runs or bribes will either go unreported or be reported as non-alcohol related.

Our model predicts that drinking drivers will respond to the new law by drinking less, driving less while drunk, leaving the scene more often, and bribing more often. Interestingly, each of the four options yields the same prediction with regard to reported alcohol-related accidents—there should be fewer drivers involved in accidents *reported* to have been drinking. Those who drink less or drive less will be involved in fewer accidents simply by having reduced their exposure. Accidents involving successful hit-and-runs or bribes will either go unreported or be reported as non-alcohol related.

Testing the Effect of the New Law

The primary data set for the tests we conducted consists of over 450,000 detailed accident reports provided by the Ohio Bureau of Motor Vehicles. This includes all reported accidents occurring between January 1, 1982 and June 30, 1983. The vast majority (about 94 percent) of these reports were made by police officers at the accident scene or later at the police station. The accident reports contain only the officer's assessment of the extent of alcohol involvement, not the driver's blood alcohol concentration. We used these data to classify each driver as drunk or sober.

Drunk Driving. Based on these data, we estimated the effect of the new law on the likelihood that a driver involved in an accident had been

drinking, controlling for the effects of a number of other variables. These included the time of day, the day of week, and the month of the accident, the age and sex of the driver, the condition of the road at the time of the accident, the type of police filing the report (state, city, or county), aggregated monthly beer and liquor consumption, and the local unemployment rate.

We found that under Ohio's new law, the probability that a driver involved in an accident had been drinking fell by about 20 percent, controlling for the factors mentioned above. This result is statistically significant and indicates that the law affected the level of drinking and driving as intended. Although 20 percent may not seem like a dramatic change in behavior, it is impressive in light of the fact that the statutory minimum penalties were not significantly increased and the likelihood of conviction was increased for only a subset of the drinking and driving population. We do not know whether the measured change in behavior will persist; other researchers have found that the effect of new DWI laws declines over time.

Hit-And-Runs. Our theory implies that the increase in the likelihood of conviction in Ohio would cause an increase in the number of drinking drivers who leave the scene of the accident. Because it is impossible for us to know if a hit-and-run driver had been drinking unless he was apprehended shortly after the accident, we examined the effect of the law only on solved hit-and-runs. (We defined a hit-and-run driver as a driver reported by the police to have been absent from the scene of the accident.) Since approximately one-third of all hit-and-run drivers are apprehended, our sample is still quite large.

Under Ohio's tougher DWI law, alcohol-related hit-and-runs increased by about 8 percent. Hit-and-runs in our control group (sober hit-and-runs) fell about 15 percent. Relative to the control group, alcohol-related hit-and-runs thus increased by about 27 percent.

We also subjected the data to more exacting statistical tests to determine whether the new law had a statistically significant effect on alcohol-related hit-and-runs. Included in our tests were several other variables that might affect the gains or costs of hit-and-run, such as whether or not the accident occurred at night or on the weekend. We also included information on the road conditions at the scene of the accident, whether it was the sheriff or the state police who

investigated, whether the car was disabled, and the age and sex of the driver. Controlling for each of these factors, we found that the new law increased the number of alcohol-related hit-and-runs relative to sober hit-and-runs. This result is statistically significant.

Recognizing the possibility of hit-and-runs, our finding of a 20 percent decline in the proportion of alcohol-related accidents could be questioned. Since this finding is based on reported drunken-driving accidents and no data are available on unsolved alcohol-related hit-and-runs, we cannot isolate the extent to which drunken drivers are fleeing accident scenes to escape reporting. However, from our sample of solved hit-and-runs we can get a fairly accurate picture of the probable composition of unsolved hit-and-runs. We conclude that the number of unsolved hit-and-runs involving alcohol, while it undoubtedly rose, did not rise enough to significantly affect the decline in overall drunken driving.

Bribery. Another way a drunken driver can avoid DWI penalties is through bribery. When involved in an accident, he may offer compensation to the other party (or to a witness) not to report the accident. Because most insurance companies require that a police report be filed before they will pay any accident compensation, bribery is most likely to occur when the accidents are minor. In such cases, the damages are below the deductible in insurance policies, or at least low enough to make a cash settlement on the spot attractive compared to a likely jail term for DWI.

Unreported accidents are not, of course, in our data set. Another type of bribe is also possible, however. A drunken driver may bribe a witness to delay the accident report until he has had time to lower his blood alcohol concentration below the legal limit. This will allow the driver to avoid DWI penalties, without affecting the ability of either party to seek recovery under their insurance policies.

Consider the circumstances surrounding a bribe. A drinking driver has just been involved in some type of car accident. If no one else is involved and there are no witnesses, assuming the car is still drivable, the driver can leave the scene with impunity. If there is just one witness or victim, a drunken driver can offer some kind of compensation (bribe) to delay a call to the police. If there are two or more witnesses or victims of the accident, however, a bribe becomes

less feasible. No one witness has an exclusive right to sell delayed reporting, and each may hold out for the entire amount the drinking driver is willing to offer. Since more than one witness or victim is typical, we would expect that only a small subset of traffic accidents will be “briable.” Briable accidents are likely to involve only one other car with one victim/witness. The accident is likely to be relatively minor (not much noise), to occur at night, and to occur



away from other traffic. In addition, briable accidents are less likely to involve injuries to either party since delayed reporting could mean serious health problems.

From the accident reports we have available, we can determine whether an accident was reported at the scene or later at the police station. Although we do not know how much time may have elapsed between an accident and its report, we used reports filed at the station as a proxy for delay.

Accidents that meet our definition of “briable” comprise only a small fraction of the data set: 384 before the law change and 95 afterwards. Because of its characteristics (minor, late at night, and remote), this group of accidents is highly likely to be reported late, even if no bribery is occurring. Also because of its characteristics, this group of accidents shows a much higher frequency of alcohol involvement than the data set as a whole.

Our theory implies that, after the law change, alcohol-involved accidents that are briable will tend to be reported late as non-alcohol-involved. Before the law change, 50 percent (35 out of 70) of late-reported accidents were

reported as alcohol-involved; after the change, 31 percent (4 out of 13) were reported as alcohol-involved. This is a decline of 38 percent—substantially more than the 20 percent decline in overall alcohol-involvement.

The observed decline could be attributed to several effects: bribes not to report alcohol-involved accidents; bribes to report these accidents late as non-alcohol involved; opportunistic use of delayed reporting to conceal alcohol involvement, with no bribe. The data do not allow us to distinguish these effects. Indeed, the sample size for these accidents is so small that we cannot draw any firm conclusions. The important point is that bribery is one of the responses that is likely to be encouraged when a state raises the penalty for drunken driving.

Conclusions

It is impossible to regulate just one aspect of human behavior. Every regulation has secondary effects and these effects are often contrary to the regulators’ objectives. Economic theory can be a powerful tool in predicting the occurrence of these unwanted side effects and in suggesting ways in which they can be avoided through a careful structuring of the law.

Our study of the Ohio experience shows that increasing the conviction rate for drunken driving can reduce the incidence of alcohol-related accidents but at the cost of more alcohol-related hit-and-runs. To reduce the significance of this secondary effect, legislators could consider simultaneously increasing the penalties for drivers who flee the scene of an accident. Indeed, the Ohio state legislature is currently considering a bill that would raise the hit-and-run penalty to that for drunken driving. This, however, might also make bribery relatively more attractive, which, in turn, might necessitate other changes in the law. By structuring a number of different penalties, the economic options of a drinking driver can be reduced; with fewer unwanted side effects DWI laws can be more effective in reducing the incidence of alcohol-related accidents.

These examples are not intended to be policy suggestions. They are used only to illustrate what we mean by the “structure” of a regulation, and its importance for individual behavior. There is still much to be learned about various regulatory structures and the effects they have on human behavior. ■