DRUGS, DRIVING AND THE LAW

A REPORT TO THE GOVERNOR AND GENERAL ASSEMBLY OF VIRGINIA

by

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While laboratory studies have demonstrated that a wide variety of drugs can produce decrements in simulated driving performance, there is as yet little evidence that drivers who use legal and illegal drugs cause a disproportionate number of traffic accidents.

A wide and increasing variety of tests are available to determine whether a person has ingested a drug, but these tests do not lend themselves to wide scale application in the field of highway safety. Data do not exist that correlate a given concentration of drug in the blood or urine with a given level of driving impairment. Until such data are developed, presumptive levels of drug intoxication will not be available as an enforcement tool.

Virginia's statute on driving under the influence of drugs, § 18.1-54, ignores the possible impairing effect of a drug and focuses instead on its source. If further research determines that drugs do cause a significant risk to highway safety, that risk will be created by legal as well as illegal drugs. In order to have a statute that more accurately reflects current knowledge of drugs and driving and at the same time has the flexibility to take account of new developments in the field, the Highway Safety Division recommends that the General Assembly consider revising § 18.1-54 to substantially conform with the Uniform Vehicle Code position on drugs.

As amended, § 18.1-54 would read:

> Driving automobiles, engines, etc., while intoxicated or under the influence of drugs. — It shall be unlawful for any person to drive or operate any automobile or other motor vehicle, car, truck, engine or train: (1) while under the influence of alcohol, brandy, rum, whiskey, gin, wine, beer, lager beer, ale, porter, stout or any other liquid beverage containing alcohol, or (2) while under the influence of any drug to a degree which renders him incapable of safely operating a motor vehicle. The fact that any person is or has been legally entitled to use any drug or drugs shall not constitute a defense against any charge of violating this section.

The Highway Safety Division also urges the General Assembly to consider amending § 46.1-359, which denies an operator's license "to any person who ... is addicted to the use of any drug which may impair the ability of a person to operate a motor vehicle," to conform to the language of the Uniform Vehicle Code, § 6-103. The recommended change would read as follows:

> The Division shall not issue an operator's or chauffeur's license to any person who is an habitual drunkard or is an habitual user of any drug to a degree rendering him incapable of safely operating a motor vehicle.

This change would remove two problems inherent in the present language. First, few drugs are addicting in the medical sense, and the license denial sanction

is limited to a person who is "addicted." Second, "may impair the ability of a person to operate a motor vehicle" is far too broad, since it conceivably includes most drugs on the market. The proposed wording permits denial of a license to a person whose drug use constitutes a substantial risk to others using Virginia's highways, whether or not the drug in question is addictive. The proposed wording also requires, however, that a person's drug use have an adverse affect on his ability to drive safely, rather than the mere possibility of an adverse effect, as the present statute reads.

For consistency, parallel statutes should be amended to replace "addiction" with "habitual user." Section 46.1-430 (7), for example, permits the Commissioner to revoke or suspend, after due hearing, the license of any person who "Is addicted to the use of drugs."

If the previous changes are enacted, § 46.1-430 (7) should be amended to read, "Is an habitual user of any drug to a degree rendering him incapable of safely operating a motor vehicle."

Likewise, § 46.1-429 requires the reporting of persons about to be released from hospitals or institutions who are incompetent to drive because of various medical conditions or "drug addiction."

Under § 46.1-427, the Commissioner is directed to suspend the license of any person so reported. The words "drug addiction" in both sections should be replaced by "habitual drug use."

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INTRODUCTION

Automobile accidents have been likened to "the modern equivalent of the Black Plague."[1] In 1971, about 55,000 persons were killed and almost 4 million injured in auto crashes in the United States.[2] In Virginia, 1,218 lost their lives and 50,051 were injured.[3] The sheer magnitude of the numbers involved has lent great urgency to efforts to reduce this toll. In fact, the number of persons killed on the highways has been declining in recent years when measured by deaths per 100,000,000 vehicle miles travelled. The nationwide motor vehicle mileage death rate in 1971 was 16% lower than the 1966-1968 average. Virginia's 1971 rate was 20% lower than its 1966-1968 average.[4]

Alcohol has long been associated with substantial increases in the risk of crashes, and has been implicated in approximately 50% of all fatal accidents. The apparent explosion of drug use in the 1960's (or, at least, the explosion in the public awareness of drug use) has caused increasing concern over the effects of drugs on the safe operation of motor vehicles. As initial research determined that many drugs could potentially affect driving performance, some suggested that drugs might cause the same kind of havoc on the highways that has been attributed to alcohol.

To determine the extent and nature of the risk to highway safety posed by drivers operating vehicles after using drugs, the Virginia General Assembly directed the Highway Safety Division to undertake a study of drugs and driving (see Appendix I). The Division was directed to assess the danger caused by the driver who operates his vehicle under the influence of any drug or combination of drugs, and to examine whether tests exist to determine whether or not a driver is under the influence of drugs, and, if so, to what degree. The General Assembly also directed that the practices of other states be examined and studied with a view to determining their applicability in Virginia.

1/ Milner, Gerald, Drugs and Driving (Basel: S. Krager, 1972), p. 1.)

2/ The 1971 Annual Reports of Activities Under the National Traffic and Motor Vehicle Safety Act and the Highway Safety Act, House Document No. 92-355 (Washington, D. C.: U. S. Government Printing Office, 1972,)p. 8.

3/ Virginia Traffic Crash Facts (Richmond: Department of State Police, 1972).

4/ 1971 Annual Reports, Appendix a, p. A8.

The Highway Safety Division delegated the preparation of this report to the Highway Research Council.

Two assumptions underlie the preparation of this report. The first is that the highway safety official's interest in drug use is limited to the effect such use may have on the safety of those who use Virginia's highways. The legality or illegality, morality or immorality, of drug use is not per se causally related to the safe operation of motor vehicles. A drug legally prescribed by a physician may be just as lethal on the highways as a drug obtained on the black market. The efficient allocation of limited resources dictates that the control of the use and distribution of drugs be the responsibility of law enforcement officials, not those concerned with highway safety. Thus, the motor vehicle code should not be an adjunct to the drug control laws except to the extent that drug use adversely affects the safety of those who use Virginia's highways.

The second assumption is that, in the absence of a demonstrated causal connection between the use of a given drug and an increased risk to the safety of those using the highways, the vehicle code ought not to penalize a driver for his drug use. Safety on the highways dictates only that those whose drug use appreciably increases the risk of danger to motorists be denied the use of the highways or be punished for a violation.

Determining whether drug use does increase the risk of accidents is not a simple matter, for we are concerned with thousands of drugs and millions of drivers. "Drug effects represent a complex interaction between the chemical agent, the individual patient, and the environment in which the drug is taken .... Inherent drug variables often affect driving behavior less than variables related to the patient himself, such as his personality traits, history of traffic code violations, criminal record, drinking and driving habits and social circumstances."5/ That a given drug affects different drivers in different ways is but one problem in determining cause and effect in highway safety: a driver and his vehicle are part of a complex and sophisticated environment. Whether or not a given factor, such as drug use, plays an important role in initiating highway crashes is the result of several factors. First, how often do persons with a concentration of drug in their blood sufficient to impair their ability to drive actually drive? Second, what is the increase in crash risk associated with a given amount of drug impairment? And third, does the drug impairment act alone or in conjunction with other factors, such as the design of the highway? And if drugs do play an important role in initiating highway crashes, what are the most efficient strategies for lessening this danger?

There are few certain answers to these questions. As noted elsewhere in this report, laboratory studies show that a wide variety of drugs can impair faculties thought necessary to the safe operation of a motor vehicle. But these studies can lead to erroneous conclusions. In the 1930's, for example, clinical studies determined that alcohol begins to impair many persons at low blood alcohol concentrations. "However, these data led and still lead people to conclude that social drinkers therefore comprise most of those who are getting into trouble. Some of the erroneous conclusions did not become apparent until it was possible to take a hard look at a sufficient body of epidemiologic data from the real world of the highway, showing overwhelmingly that

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5/ Milner, p. 1.

those with alcohol who get into trouble on the highway have extraordinarily high blood alcohol concentrations which cannot be reached through normal social drinking." 6/

This report will survey the research on the effects of drugs, summarize studies on the relationship between drugs and driving and examine methods of detecting drug use. Based on the scientific evidence available, Virginia's laws on drugs and driving will be analyzed.

6/ Waller, Julian A., "Drugs and Highway Crashes," Journal of the American Medical Association, Vol. 215, No. 9, (March 1, 1971), p. 1477.

THE EFFECTS OF DRUGS

What is drug abuse? What is drug use? In fact, what is a drug? These questions must be answered before undertaking an examination of the effects of drugs on driving. Like most words and phrases, "drug abuse," "drug use" and even "drug" have a number of definitions: social, medical, legal and situational.

To the law, drug abuse can range from the ingesting of one illegally obtained but legally manufactured barbiturate to the daily intravenous use of illegally obtained heroin. The law often defines "drug" in terms of perceived threats to society, rather than by any medical criterion. Caffeine, for example, is a "drug," but the law does not consider the inveterate coffee drinker a "drug user" or "abuser." The nicotine in cigarettes is also a "drug," but, again, the law does not consider the smoker a "drug user." And, alcohol, America's most widely used "drug," is considered a beverage which the law generally ignores unless a person neglects to pay the tax on it or drives after consuming a given quantity of it.

How should these terms be defined by highway safety officials? In this report, a "drug" is any substance administered to a person by a physician or by the person himself in the hope of achieving a better physiological or psychological state. 1/ This definition includes both licit and illicit drugs, for we are concerned not with the source of the drug but with its effect, if any, on safe driving performance.

The term "drug abuse" will not be used in this report, largely because most definitions of the term do not fit the needs of highway safety. A patient sedated by tranquilizers almost to the point of sleep may not be a "drug abuser" if the drug was prescribed by a physician, while the youth who smokes one "joint" of marihuana is by law a "drug abuser." Since the sedated person is probably a far greater risk to highway safety than the youth, the utility of the term "abuse" fails.

We are concerned with the possible effects of all drugs on highway safety, and will use the term "drug use" to mean the ingestion of any drug, in any quantity, under any circumstances, whether licit or illicit.

There are thousands of "drugs" available in the United States today; many of them have the potential to affect driving performance. Some of the more widely used drugs are examined below.

Barbiturates

Barbiturates are drugs which depress the central nervous system. In therapeutic doses, they mildly depress the action of the nerves, skeletal muscles and the heart. In higher doses, the symptoms of barbiturate intoxication are similar to those of alcoholic intoxication: difficulty in thinking, impairment of ego control, emotional instability, over-sedation, euphoria, impairment of higher intellectual functions, poor judgment, motor incoordination, and confusional psychosis. The use of barbiturates can lead to both physiological and psychological dependence. In fact, the barbiturate withdrawal syndrome is often said to be more life-threatening than the heroin withdrawal syndrome.

1/ Nichols, James L., Drug Use and Highway Safety: A Review of the Literature, U. S. Department of Transportation (Washington, D. C.: U. S. Government Printing Office, 1971), p. 1.

Barbiturates are usually classified by the duration of their action upon the body. There are ultrashort, intermediate, and long acting barbiturates, with the last-mentioned exerting their effect for more than six hours. While the primary effects of a barbiturate, such as drowsiness, may last for only a short time, more subtle effects, such as impairment of judgment and fine motor skills, may persist for many hours. "Thus, 200-mg doses of secobarbital at bedtime have been shown to produce performance decrement 10 to 22 hours later in multidimensional tests designed to measure pilot proficiency in simulated air missions."[2/]

Like many drugs, barbiturates do not produce a consistent effect on all individuals under all circumstances. "For example, when 200-mg of secobarbital are taken with the expectation of going to sleep in a suitable environment, most individuals will respond in the predicted manner. When the same amount of secobarbital is taken in a stimulating environment with the expectation of 'having a good time,' many individuals will experience intoxication and excitement." And the reaction of yet other persons will simply be idiosyncratic.[3/]

Previous tolerance to drugs, the excitability of the central nervous system at the time of drug administration, the dose of the drug and whether taken orally or intraveneously are variables that can determine the degree of central nervous system depression caused by a barbiturate.[4/]

Curiously, the "hangover" effect of a barbiturate may be just the opposite of its main effect, excitement rather than drowsiness. "... An individual with slowly waning concentration of barbiturate in his tissues may awaken slightly intoxicated and feel euphoric and energetic; later, as the demands of his daytime environment challenge his possibly impaired faculties, he may display irritability and temper."[5/]

Visual perception and attention — important attributes for safe driving — have been shown to be impaired up to eight hours after ingestion of a 100-mg dose of sodium pentobarbital. Other studies have shown that a variety of barbiturates can slow reaction time, while psychomotor skills can be impaired by therapeutic doses of secobarbital and pentobarbital.[6/]

2/ Goodman, Louis S. and Gilman, Alfred (eds.), The Pharmacological Basis of Therapeutics (New York: The MacMillan Co., 1970), p. 103.

3/ Statement of Donald R. Wesson, M.D., and David E. Smith, M.D., Barbiturate Abuse — 1971-1972, Hearings Before the Subcommittee to Investigate Juvenile Deliquency of the Committee on the Judiciary, United States Senate (Washington, D. C.: U. S. Government Printing Office, 1972), p. 119.

4/ Goodman and Gilman, p. 103.

5/ Ibid.

6/ Smart, Reginald G.; Schmidt, Wolfgang; and Batemen, Karen, "Psychoactive Drugs and Traffic Accidents," Journal of Safety Research, Vol. 1, No. 2 (June 1969), p. 68.

Of the dozen or so barbiturates widely used today, "five or six would probably be sufficient to meet most therapeutic needs."[7] According to the Federal Bureau of Narcotics and Dangerous Drugs (merged on July 1, 1973, into the Drug Enforcement Administration), an estimated 284,527 kilograms of barbiturates were legally produced in the United States in 1971. For 1970, the figure was 445,645 kilograms.[8] If prescribed in 100-mg doses, the 1971 production could supply 2.84 billion dosage units, or more than 10 dosage units for every man, woman and child in the United States.

Opiates

Heroin, opium, morphine and related synthetic and semisynthetic narcotics act primarily on the central nervous system. The legal opiates are used for the relief of pain, tranquilization, sedation, and the relief of coughing and diarrhea. The opiates produce a wide range of unwanted side effects, including nausea, vomiting, dizziness, mental clouding, dysphoria, and constipation. Those who use opiates regularly, whether legally or illegally, usually develop tolerance to most of the unwanted side effects of the drug. All opiates can cause physiological dependence: lack of the drug produces an unpleasant and often painful withdrawal syndrome which is, however, rarely fatal.

Despite their addicting nature and the widespread stories of their horrible effects, opiates themselves do not cause any physiological damage to the body. As long ago as the 1920's, scientists proved that "morphine addiction is not characterized by physical deterioration or impairment of physical fitness aside from the addiction itself."[9]

According to a standard textbook on pharmacology, "The addict who is able to obtain an adequate supply of drugs through legitimate channels and has adequate funds usually dresses properly, maintains his nutrition and is able to discharge his social and occupational obligations with reasonable efficiency. He usually remains in good health, suffers little inconvenience, and is, in general, difficult to distinguish from other persons."[10]

The poor health normally associated with heroin addicts in the United States is caused by the problems associated with addiction to an illegal drug, rather than by the drug itself. Infectious diseases are often the result of using dirty needles. The high price of black market heroin and the constant struggle to get his next fix often cause the addict to suffer malnutrition, with its concomitant increased susceptibility to disease.[11]

7/ Goodman and Gilman, p. 98.

8/ Carabillo, Ernest A., Jr., Chief, Drug Control Division, Bureau of Narcotics and Dangerous Drugs, United States Department of Justice, letter to author dated June 25, 1973.

9/ Brecher, Edward M., Licit and Illicit Drugs (Mt. Vernon, N. Y.: Consumers Union, 1972), p. 23.

10/ Goodman and Gilman, p. 286.

11/ Brecher, p. 14.

Amphetamines

Amphetamines and related "pep pills" are central nervous system stimulants. In therapeutic doses, they increase the heart rate and blood pressure and cause dilation of the pupils, and subjective feelings of alertness, self-confidence and well-being. Consequently, they can counteract fatigue and work-induced decrements in performance, provided the tasks are repetitive and do not require thinking or deliberation. 12/

Because of their ability to counteract fatigue, amphetamines traditionally have been used by truck drivers. 13/

The seeming benefits of amphetamines, however, are counterbalanced by their side effects: tremulousness, restlessness, agitation, impatience and aggressiveness. Prolonged use can lead to hallucinations and dulled emotions. When the drug wears off, extreme fatigue and mental depression can occur.

The feeling of self-confidence induced by amphetamines has been found to increase the willingness of a person to take risks. 14/ An increase in risk-taking is also caused by alcohol, and may well be one of the major factors in alcohol-induced accidents. The person under the influence of amphetamines or alcohol feels extremely confident at precisely that time when his actual ability to perform is impaired.

The abuse potential of amphetamines led to the imposition of strict controls on their manufacture and use. Since 1972, the federal government has imposed production quotas on amphetamines, and their legal production has dropped sharply, from 15,229 kilograms in 1971 to a quota of 992 kilograms in 1973. One would expect, therefore, that the use of amphetamines should decline, but there is no way of knowing, of course, the output of illegal clandestine manufacturers of this drug.

Marihuana

Marihuana, or cannabis, is probably the most widely used illegal drug in the United States today. Estimates of the number of persons who have ever tried marihuana range from 15 million to more than 24 million. Over half of those who initially experiment continue to use the drug one or more times a month. Of this group, about 25% use the drug three times a week or more. 15/

12/ Smart, Schmidt and Bateman, p. 68.

13/ Amphetamine Abuse Among Truckdrivers, Hearings Before the Subcommittee on Alcoholism and Narcotics of the Committee on Labor and Public Welfare, United States Senate (Washington, D.C.: U. S. Government Printing Office, 1971).

14/ World Health Organization, Psychoactive Drugs and Road Safety, (Geneva, 1965), p. 20.

15/ Marihuana and Health, Second Report to the Congress from the Secretary of Health, Education and Welfare (Washington, D.C.: U. S. Government Printing Office, 1972), p. 8.

Because of its widespread use, any serious performance decrements caused by marihuana could well pose a major threat to highway safety — if those who use marihuana drive after using the drug. The risk posed by this drug (or any other) to highway safety is a result of two factors: the performance decrement caused by the drug, and the number of persons who drive while experiencing the effects of the drug. While the evidence on the first point is not conclusive, it appears that marihuana does not cause decrements as severe as those caused by alcohol and certain other drugs. How many persons combine marihuana and driving is unknown.

In the dosage levels typically available in the United States, marihuana causes few physiological changes in the human body. The most consistently reported changes are an increased pulse, dryness of the mouth and throat, and a reddening of the eyes at the time of use. "From the standpoint of lethality, cannabis products must be counted among the safer of the drugs in widespread use." 16/

Regular users of marihuana have reported a wide variety of adverse symptoms, but each sympton has generally been experienced by only a small minority. These adverse symptoms included reduced self-confidence, crying, indifference or apathy, aggressive feelings, poor memory, headache, restlessness and jittery feelings. "Of interest is the wide variety of adverse effects which occur usually to some individuals, and to many others on an occasional basis. These include hallucinations, anxiety symptoms, impaired mental process, and symptoms of depression." 17/

A survey of chronic, infrequent, and former users of marihuana found that there was a fairly consistent self-reported downgrading of ability to judge time. 18/ Of the infrequent and former users, 78% consistently downgraded their ability to judge time while under the influence of the drug, while 54% of the chronic users downgraded this ability. Reaction time was said to be impaired by 66% of the infrequent and former users, while 36% of the chronic users reported this effect.

Of the infrequent and former users of marihuana, 65% downgraded their ability to keep a vehicle under control, while 18% of the chronic users reported impairment of this ability. Three-quarters of the former users felt their ability to respond to an emergency situation was impaired by the use of the drug, and 48% of the chronic users shared this belief.

16/ Ibid., p. 5.

17/ Halikas, James A., Goodwin, Donald W., and Guze, Samuel B., "Marihuana Effects: A Survey of Regular Users," Journal of the American Medical Association, Vol. 217, No. 5 (August 2, 1971), p. 694.

18/ Klein, Arnold W., Davis, Joseph H., and Blackbourne, Brian D., "Marihuana and Automobile Crashes," Journal of Drug Issues, Vol. 1, No. 1 (January 1971), pp. 18-26.

"With a significant proportion of individuals being stopped by the police while under the influence of marihuana, many individuals may question why these intoxicated drivers go unrecognized by the authorities. The answer seems rather obvious. The least detrimental effect of marihuana, as evaluated in the survey, appears to be the ability to follow the directions of a police officer." 19/

The performance decrements attributed to marihuana appear to be related to the complexity of the task involved. Generally, the more complex and demanding the task involved, the greater the degree of impairment. Research has also indicated that there is a scientific basis for the claim of marihuana users that the more often a person uses the drug, the less of the drug he needs to achieve the desired effects. "Naive subjects do not react the same as experienced marihuana users at the same dose levels. Naive subjects commonly report less marked subjective effects than reported by experienced users. However, naive subjects demonstrate greater decrement in actual performance. Experienced users seem better able to compensate for the acute drug effects on ordinary kinds of performance, at least at lower levels." 20/ Other research has demonstrated that regular users of the drug apparently metabolize the drug quicker than nonusers, which may explain why experienced users report more subjective effects. 21/

Several laboratory studies have been conducted on the performance of persons under the influence of marihuana. One study, for example, involved tracing a pattern on an oscilloscope (pursuit meter) to test motor coordination. Performance after intake of 5 mg of marihuana was reported to be significantly poorer than performance after intake of a placebo. There was no difference in the performance between subjects who ingested 2.5 mg or 5 mg of marihuana, indicating that at dose levels commonly available, the performance decrement of marihuana may not be dose-related. 22/

A study of perceptual performance indicated that marihuana may have a detrimental effect in situations where alcohol would not. However, "the impairment of marihuana appears not to be determined by the demands for information processing from a divided attention span, a factor of prime importance in driving." 23/

19/ Ibid., p. 23.

20/ Marihuana and Health, A Report to the Congress From the Secretary, Department of Health, Education and Welfare (Washington, D. C.: U. S. Government Printing Office, 1971), p. 61.

21/ Carabillo, Ernest A., Jr., Chief, Drug Control Division, Bureau of Narcotics and Dangerous Drugs, U. S. Department of Justice, letter to the author dated June 25, 1973.

22/ Manno, J. E., Kiplinger, G. F., Scholz, N., and Forney, R. B., "The Influence of Alcohol and Marihuana on Motor and Mental Performance," Clinical Pharmacology, Vol. 12, No. 2 (1971) , pp. 202-211.

23/ Moskowitz, Herbert, "Alcohol and Drug Impairment of the Driver," paper presented at The International Automotive Engineering Congress, Detroit, Michigan, 1973.

Another study, however, demonstrated no significant decrement in acceleration, brake, turn signals, steering and speed variables for marihuana as compared to nondrug control subjects. Subjects intoxicated with alcohol to the legal intoxication limit of .10% made 15% more errors than either the marihuana or nondrug control group. The marihuana subjects reported that while their driving performance was affected by the drug, they could effectively compensate by driving slowly and cautiously. 24/ A possible defect in this study, however, is that the legal level of intoxication is probably higher than the typical level of a person with a "social" alcohol high, while the dose of marihuana used may have been fairly close to a typical social marihuana high.

A study which compared the effects of marihuana and alcohol on risk-taking behavior concluded that

> ... the subject under the influence of marihuana appears to be more cautious or more passive when confronted with a potentially hazardous passing situation than is either a normal subject or a subject under the influence of alcohol. He appears to be able to judge risk as accurately as a normal individual, and consequently does not have more accidents. A comparable subject under the influence of alcohol does not judge risk as accurately, is more aggresive, and does have more accidents. In both the marihuana and alcohol study, the subject's decision-reaction time is prolonged to the signal presented during the nonemergency trials. The response to the emergency signals, however, is not impaired by marihuana, while it is by alcohol. Thus, marihuana does appear to reduce vigilance, but the person under its influence is able to compensate effectively in a high stress situation. Alcohol subjects are not able to achieve this compensation. In this respect it would appear that alcoholic intoxication is a more hazardous factor in injury causation behavior than is marihuana intoxication. 25/

Another study conducted to assess the effects of alcohol and marihuana on risk taking concluded that the two substances affected different component processes of the driving task. 26/ When confronted with a simulated passing situation, marihuana

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24/ Crancer, A.; Dille, J. M.; Delay, J. C.; Wallace, J. E.; and Haykin, M. D., "The Effects of Marihuana and Alcohol on Simulated Driving Performance," Science, No. 164 (May 16, 1969), pp. 851-854.

25/ Dott, Andrew B., Effect of Marihuana on Risk Acceptance in a Simulated Passing Task, Department of Health, Education and Welfare (Washington, D. C.: U. S. Government Printing Office, 1972), p. 19.

26/ Ellingstad, U. S.; McFarling, L. H.; and Struckman, D. L., Alcohol, Marihuana and Risk Taking, U. S. Department of Transportation (Washington, D. C., 1973).

tended to cause overestimation of the length of time it would take to pass a preceeding vehicle, so the subject often elected not to pass. But marihuana did not adversely affect decisions concerning risk taking. Alcohol, on the other hand, produced what the report called a more "risky/indecisive" style of response, with the subject frequently aborting a simulated pass which he had judged could be made safely.

Another researcher tentatively concluded that the "preliminary evidence indicates that marihuana impairs the ability to drive. However, marihuana apparently is not a significant factor in the statistical incidence of fatal and nonfatal accidents. These two observations, combined, indicate that either the marihuana smoker is conscious of the impairment and avoids driving, or that he manages to compensate for the deficiency, at least to some extent." 27/ While these findings were labelled as tentative, they are probably about as definite as possible given the imperfect state of man's knowledge of the effects of marihuana.

Tranquilizers

Tranquilizer is not a specific term, but, rather, is applied to a number of compounds, not chemically related, which all produce mild sedative effects or create a relaxed feeling in nervous persons. 28/ Tranquilizers are often called ataxics.

In therapeutic doses, tranquilizers may actually improve the driving performance of extremely anxious individuals. But these drugs, because of their ability to induce mood changes and affect behavior, can affect the sensory organs, particularly vision and motor coordination, with a consequent reduction in reaction time. 29/ The sedative effect of tranquilizers can also induce drowsiness.

Major tranquilizers, used to modify the symptoms of psychosis, can also impair the mental and physical skills required to perform coordinated tasks such as driving and machine operation. 30/

27/ Benjamin, Fred B.,"The Effect of Marihuana on Driving Performance," in Current Research in Marihuana (New York: Academic Press, Inc., 1972), p. 209.

28/ Miller, Louis, and Dimling, John A., Jr., Driver Licensing and Performance, Vol. 1, Research Review and Recommendations, U. S. Department of Transportation (Washington, 1969).

29/ World Health Organization, Psychoactive Drugs and Road Safety (Geneva, 1965).

30/ Chambers, Carl D., and Inciardi, James A., An Assessment of Drug Use in the General Population, Special Report No. 2., New York State Narcotic Addiction Control Commission (New York, 1971).

A British study of four commonly used minor tranquilizers found that three of them affected performance on low speed vehicle handling tests and suggested "a strong possibility that they will affect performance in a real driving situation."[31] Furthermore, the experimental subjects were unable to identify when they had taken a drug and when a placebo, with the practical effect that they didn't know whether the drug was affecting them and could not compensate for a perceived impairment.

Other Drugs

A host of other drugs available today have the potential to affect driving performance. The antidepressants, often called mood elevators, have effects similar to the amphetamines. They have been reported to enhance the effects of alcohol, amphetamines, sedatives and other drugs. Adverse reactions commonly associated with the use of these drugs include blurred vision, dizziness and hypertension.[32]

Antihistamines and related motion sickness remedies, many available without prescription, can have side effects ranging from no reaction to hallucinations. "Dizziness, drowsiness, inattention and confusion occur fairly frequently, but it is impossible to predict the reaction."[33] According to a standard pharmacology textbook, about one in four persons will experience some bothersome reaction when taking an antihistamine. "The side effect with the highest incidence, and the one common to all histamine antagonists, is sedation ... it interferes with the patient's daytime activities and can so dull the mind and slow reflex activity that accidents may occur."[34]

The psychedelic drugs such as LSD and DOM, in addition to their profound effect after ingestion, can have prolonged aftermirages, visual hallucinations and alterations of cognition and judgment. One study has reported that three former users of these drugs reported experiencing visual disturbances while driving although they were not "high" at the time.[35]

31/ Betts, T. A.; Clayton, A. B.; and Mackey, G. M., "Effects of Four Commonly-used Tranquilizers on Low-speed Driving Performance Tests," British Medical Journal, No. 4 (December 9, 1972).

32/ Chambers and Inciardi.

33/ Miller and Dimling, p. III-104.

34/ Goodman and Gilman, p. 640.

35/ Wood, George E., "Visual Disturbances Experienced by Hallucinogenic Drug Abusers While Driving," American Journal of Psychiatry, Vol. 127, No. 5 (November 1970), pp. 683-686.

Alcohol and Drugs

A subject of increasing concern is the combination of alcohol and drugs. Heavy drinking and drug use coincide to a certain extent. Equally important, however, is the possible effect of combining moderate amounts of alcohol with therapeutic or moderate doses of drugs. Can the combination of the two (additive effect), neither of which alone would cause marked impairment, cause significant impairment? Can the synergistic effect of alcohol and drugs cause impairment greater than the sum of its parts? Alcohol, barbiturates and tranquilizers, as central nervous system depressants, can be expected to have at least an additive effect. Deaths caused by mixing these substances, accidentally or intentionally, are reported too often for comfort. The effect of combining alcohol and other drugs is less clear. But caution is necessary in mixing these substances, for the effects are often unexpected.

At the least, the testing a new drug undergoes before it is marketed ought to include studies of its interaction with alcohol. The widespread use of both alcohol and drugs in this country make it likely that there will be some mixing of the two. Those who do not intentionally impair their ability to drive have the right to know whether the drink they have at lunch will combine dangerously with the medication they took that morning.

The fact that specific drugs in laboratory settings produce decrements in simulated driving performance is only the beginning of an assessment of the actual risk to highway safety posed by actual drivers under the influence of drugs. That a particular drug renders a driver incapable of safely driving is, in reality, a minor problem if very few drivers use that particular drug, or if they do not drive when they do use it. While in an ideal world it would be desirable to remove from the highways all drivers who regularly use a drug which causes significant impairment, in the real world this will be done only if (1) a sufficient number of drivers use the drug, (2) a method of detecting these users is readily available, and (3) if the cost involved is deemed commensurate to the risk thereby eliminated. Spending a great deal of money to remove a minor risk to highway safety in a world of limited resources cannot be justified either on a resource allocation or highway safety basis.

Just how many people use what kinds of drugs? And do they use these drugs when they drive? The first question has been asked repeatedly, but good answers are hard to find. To ask this question of a large and diverse population, surveys are almost invariably involved. Yet such a survey often asks the respondent to report his illegal behavior, i.e., the use of marihuana, or the illegal use of legal drugs. Probably the most thorough survey to date was commissioned by the New York State Narcotic Addiction Control Commission. 1/ This survey of the people of New York State focused on drug use, not drug abuse. While by definition the use of any illegal drug, such as marihuana, may be legally classified as abuse, the focus of the study was on what people are using which drugs. The interview subjects were questioned, however, as to the source of supply of the drug and the manner and place in which the drug was used.

The primary focus of the study was to assess the prevalence, incidence, frequency and situational content of all types of drug use within the general population of New York State.

For the purposes of the study, prevalence was defined as the use of a given drug at least once by any person over 14 years of age. Prevalence, therefore, gives a picture of how many persons have ever used a particular drug, but tells nothing as to whether they are still using the drug, or how often they use the drug.

For the purposes of this report, the most important statistic is that of incidence of drug use, defined as the percentage of the population which has used a given drug six times within the month preceding the interview. While it is possible that a person who has used a given drug only once may, because of that drug use, become involved in an automobile accident, the likelihood of this happening is small. If a particular drug has an adverse effect on driver performance, concern should focus on those who use that drug with some degree of frequency in circumstances likely to be followed by driving.

1/ Chambers, Carl D. and Inciardi, James A., An Assessment of Drug Use in the General Population. Special Report No. 2. New York State Narcotic Addiction Control Commission (New York, 1971).

The study also analyzed the demographic characteristics of the users of each drug: age, sex, and employment status.

What follows is a breakdown by drug of the incidence and prevalence of specific drug use and some socioeconomic data on the users of these drugs. The socioeconomic data related only to those who were defined as regular users of the drug: persons who had used the drug six times within the month prior to the interview. Note that the incidence data, reflecting the percentage of the population using a drug with some frequency, are all fairly low.

Barbiturates (p. 21)[2/]

Prevalence: 19.9% of the population aged 14 and over took a barbiturate at least once.

Incidence: 2.6% of the population aged 14 and over used a barbiturate at least six times within the month prior to the interview.

"The majority of the regular barbiturate users are either employed males (30.4%) or unemployed females (36.2%). The unemployed females are presumed to be housewives. Very few of the regular users of these drugs are high school or college students of either sex— 5.8% of the total regular users."

According to the survey, the use of barbiturates was directly correlated with age — the incidence of regular barbiturate use rose markedly with increasing age. The incidence of regular use of these drugs was 17 times greater among persons over 50 years of age than among those under 18.

The typical barbiturate user was at least a high school graduate, a member of the middle or lower middle/lower socioeconomic classes, and used the drug as part of a legitimate therapeutic regimen. But 8.8% of the regular users reported taking the drug at social gatherings, 10.5% did not secure any of their drug with a legal prescription and 21.9% took the drug other than as prescribed.

Regular barbiturate users also tended to use other drugs, with the most commonly named drugs being the relaxants, minor tranquilizers, marihuana and hashish.

Non-barbiturates Sedative-Hypnotics (p. 28)

Prevalence: 8.8%

Incidence: 1.4%

2/ The page numbers in parentheses refer to the page of the Commission report where a discussion of the survey results can be found.

The use of non-barbiturate sedative-hypnotics is "significantly associated with females," with 65.8% of all regular users being females. Age again was a factor in the use of these drugs: 78.6% of all regular users were 35 or older. While the use of these drugs was largely legal, a significant portion of regular users — 19.3% — did not follow the regimens prescribed.

Relaxants and Minor Tranquilizers (p. 35)

Prevalence: 19.9%

Incidence: 3.8%

As with other drugs whose purpose is to calm the individual, the use of these drugs was overwhelmingly associated with females, and the greater the age, the greater the incidence of regular use.

Unemployed females, presumed to be housewives, constituted 45% of the regular users. Almost three-fourths of regular users were 35 years old or older. The use of these drugs was disproportionately a middle-class phenomenon — 47.6% of all regular users were middle class.

While most use occurred within legitimate channels, 17.5% of the regular users did not follow a medically prescribed regimen of use, and 6.9% reported taking the drugs at social gatherings.

Major Tranquilizers (p. 41)

Prevalence: 3.3%

Incidence: 0.5%

These drugs are used to modify the symptoms of psychosis and tend to potentiate the effects of other central nervous system depressants. "They may also impair the mental and physical skills required to perform coordinated tasks such as driving, machine operation and so on."

The regular use of major tranquilizers was associated with persons age 35 and over. The lower middle/lower socioeconomic class contributed 66.2% of all regular users. "The lower the socioeconomic class, the greater the use of these drugs."

While 94.4% of regular users secured all of their drug with a legal prescription, 14.1% admitted manipulating the therapeutic regimen.

The users of major tranquilizers also tended to be regular users of other drugs. Relaxants and minor tranquilizers were used by 33.8% of all regular major tranquilizer users; 25.4% regularly used barbiturates and 12.7% regularly used antidepressants.

Antidepressants (Mood Elevators) (p. 48)

Prevalence: 2.5%

Incidence: 0.3%

Adverse reactions commonly associated with the use of these drugs include blurred vision, dizziness, and hypertension. These drugs also potentiate the effects of amphetamines, sedatives and other drugs.

Females made up the preponderance of the regular users of these drugs — 71.8% — but use was not concentrated in any age group.

While a significant number of regular users — 12.8% — reported using these drugs at social gatherings, the survey cautioned that "one should not assume that all use at social gatherings implies use for its euphoric effects."

Many regular users of antidepressant drugs also used other drugs: 71.8% regularly used relaxants and minor tranquilizers; 23.1% regularly used major tranquilizers; 25.6% regularly used amphetamines; and 25.6% regularly used marihuana.

Pep Pills (Amphetamines) (p. 53)

Prevalence: 6.3%

Incidence: 0.8%

Methamphetamine was excluded from this portion of the survey, and the only drugs reported with any regularity were amphetamine sulphate (Benzedrine) and dextroamphetamine (Dexedrine).

The use of pep pills was fairly evenly distributed among the socioeconomic classes, but education played an important role in pep pill use. Seventy percent of regular users were high school graduates and 40.9% had education beyond the high school level. Unemployed females, presumably housewives, were the major contributors to the regular users, comprising 26.4% of the group. The age distribution of pep pills users was bimodal, with a heavy representation among those 18-24 (31.8%) and those 50 and older (27.3%).

Pep pills were the most frequently abused legal drug, with 32.7% of the regular users reporting they obtained none of their drug with a legal prescription, and 52.7% reporting they obtained some of their drug without a legal prescription. But 12.7% refused to answer the question of how they obtained their drug, and it is reasonable to assume they did not obtain their drug with a legal prescription.

The social use of pep pills was quite high — 40% of the regular users (0.8% of the population) reported using the drug at social gatherings. Overall, 48.2% of regular users did not take the drug as prescribed, and 19.1% refused to answer the question.

Of the regular users who were employed, 71.4% reported using the drug on the job, and 20% of the regular users who were students reported using the drug at school.

Regular users of pep pills also tended to be regular users of illegal drugs, with 60.9% reporting regular use of marihuana or hashish, 14.5% reporting regular use of methamphetamine (some of this drug use may have been legal), and 11.8% reporting the use of LSD.

There was also regular involvement with other drugs: 28.2% regularly used relaxants and minor tranquilizers; 26.4% regularly used diet pills; 21.8% regularly used barbiturates; and 17.3% regularly used non-amphetamine stimulants. These data tend to support previous observations that there exists "a large number of persons who regularly and concurrently used central nervous system stimulants and central nervous system depressants." Of the estimated 110,000 regular users of pep pills, a minimum of 27.3% were also regular users of one of the central nervous system depressants. "There does appear, therefore, to be a rather sizeable population made up primarily of white middle-class females who graduated high school but are not currently in the labor force, who have become cyclical users of drugs to stimulate and to relax them."

NOTE: The data contained in this study were collected in 1970. Since then, rather stringent controls have been placed on the legal production of amphetamines, with production in 1973 only 3.7% that of 1970. While this may mean that the use of these drugs has declined, illicit production can be expected to fill some of the void created by cutbacks in legal production.

Diet Pills (p. 61)

Prevalence: 11.7%

Incidence: 1.6%

Diet pill drugs are amphetamine-like substances prescribed alone or in combination with a central nervous system depressent to counteract excitability.

Females comprise 80.2% of all regular users of these drugs. While most use was legitimate, 18.5% reported never having a legal prescription and 20.8% reported obtaining a part of their drug without a legal prescription. Reported use at social gatherings was 7.2%.

Controlled Narcotics (Non-heroin) (p. 72)

Prevalence: 7.5%

Incidence: 0.1%

The non-heroin controlled narcotics include opium, morphine, codeine, demerol, dilaudid, methadone, and other analgesics.

Once again, females were overrepresented among regular users: 76.5%. Since this group of drugs comprises most of the legal powerful pain killers, most use was legal, but 11.8% reported they were not taking the drug as prescribed, and 11.8% reported using drugs obtained without a prescription.

According to the survey data, only 5.9% of the regular users were concurrent regular users of heroin.

Marihuana/Hashish (p. 82)

Prevalence: 10.5%

Incidence: 3.5%

The survey data supported previous reports that most users of marihuana or hashish are young males, but not necessarily students. Males comprised 65.5% of regular users, and 70.6% of all regular users were under 25. Over half of the regular users were not students (51.9%) and 69.4% of these were employed. While regular use is concentrated among the young, 17.5% of regular users were between 25 and 34, and 11.9% were 35 or older.

The data also confirmed that the use of marihuana and hashish was disproportionately represented among the upper and upper middle class, and largely used at social gatherings (75.8%). Marihuana is, in short, what has come to be described as a "recreational" drug.

"The data indicated that most of those persons regularly using marihuana/hashish are not concurrent regular users of other drugs," (original emphasis). However, 13.8% of the regular users also reported regularly using pep pills and 12.5% reported regularly using barbiturates.

LSD (p. 90)

Prevalence: 2.4%

Incidence: 0.3%

The majority of regular users of LSD are middle-class, and under the age of 25. The use of LSD is largely social, with 86.7% of the regular users reporting use at social gatherings. All of the LSD users were regular users of marihuana/hashish, and extensively used other drugs, both legal and illegal. The regular LSD user is the classic poly-drug user.

The report noted that both the incidence and prevalence figures were probably minimal projections, since the interviewing technique was not likely to discover those who had "dropped out" and centered their lives around drug use.

Methedrine (Speed) (p. 100)

Prevalence: 1.9%

Incidence: 0.3%

The use of speed was largely confined to the young, with 80% of all regular users under the age of 25. Regular users often used the drug at social gatherings.

The legal production of this drug has largely been curtailed since this survey, but there is no way of knowing the extent of illicit production.

Heroin (p. 106)

Prevalence: 1.0%

Incidence: 0.2%

The use of heroin was largely confined to young males of the lower socioeconomic classes. Half of all regular users of heroin were aged 18-24. Minorities — blacks and Puerto Ricans — were the major contributors to the regular user group — 65.6%.

The report noted that the figures for the use of heroin were most probably underrepresentations of the heroin using population. This result was largely attributed to the interviewing and sampling technique. "... [I]t would not be unreasonable to suggest that the sampling technique employed for this survey was successful in identifying only some one-third of the actual population of regular heroin users.... No other drug-using population has so many participants who are not [likely to be] selected for interview ...."

An often used technique for assessing the risk posed by drivers who use drugs is the driver history survey. These surveys usually match the driving records of known drug users against the records of persons who do not use drugs, or, more precisely, persons who are not known to use drugs. For maximum reliability, surveys of this type should match by age and sex both groups of drivers. If, for example, the records of young drug users were matched against the records of the general population, a higher violation rate and accident rate for the young drug users would almost surely emerge, because young drivers, whether or not drug users, tend to have poorer driving records than the general population. To assess the increase in risk associated with drugs, the drug using population should be compared to a demographically similar group.

Another point bears noting: drug users often have higher violation rates than those who do not use drugs, but similar accident rates. If the number of violations a person accumulates were an accurate predictor of his likelihood of accident involvement, these results might cause great concern. But research has shown that violation rates in general have extremely limited value in predicting future accident involvement (in fact, past accidents are only a slightly better, though still poor, predictor of future accidents). 1/ Furthermore, many of the citations accumulated by drug users tend to be for non-moving violations: improper equipment, failure to exhibit registration, and the like. These kinds of violations are more often a reflection of socioeconomic factors than of poor driving performance.

Indiana Survey

A study of the blood drug level of Indiana college students involved in automobile accidents as compared to non-accident controls failed to establish any link between drug use and unusual accident rates. 2/

The blood tests revealed that accident victims and non-accident controls had about the same blood drug levels: less than 10% for each group. 3/ Furthermore, historical data dealing with drug use and driving records showed that those students who did not use drugs were just as likely to have accidents as those who did.

That the drug users did not have more accidents than the drug free students may be partially explained by "the general impression of the interviewer that students

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1/ Steward, J. Richard and Campbell, B. J., The Statistical Association Between Past and Future Accidents and Violations (Chapel Hill: Highway Safety Research Center, University of North Carolina, 1972).

2/ The Study of Possible Influences of Licit and Illicit Drugs on Driver Behavior (Bloomington: Institute for Research in Public Safety, Indiana University, 1971).

3/ Ibid., p. 23.

who were users of licit and illicit psychotropic drugs tended to avoid driving while under the influence of such drugs. Some reported that they felt extremely 'paranoid' while driving under the influence of cannabis through fear that their erratic driving might be noticed by a law enforcement officer, and they drove much more carefully than usual. Many pointed out that this effect was markedly different from drunken driving patterns they had experienced, in which they had become recklessly self-confident and driven at excessive speed." 4/

The study concluded that "such factors as students' sex, marital status, physiological characteristics, and previous driving histories, were far more strongly related to motor vehicle accidents than drug usage."

Chronic Medical Conditions Survey

Julian Waller, M. D., examined the driving records of persons known to the California Department of Motor Vehicles to have chronic medical conditions: epilepsy, cardiovascular disease, diabetes, alcoholism, mental illness and drug use. 5/ Exposure rates were calculated and ten-year age-adjusted expected accident and violation rates were prepared. The adjusted accident rates for each of the medical conditions, except drug abuse, were approximately twice those of the drivers in a comparison group. (See Table I.) The observed accident rate of the drug abusers was not significantly higher than the expected rate. On the other hand, the observed violation rate for all drivers with a chronic medical condition, including drug abusers, was significantly higher than that of the comparison group.

> Why do drivers who use drugs have low accident rates but higher violation rates? Two explanations seem reasonable. The first is the fact that conviction for illegal possession and use of addicting drugs makes no distinction between those who are using drugs only occasionally and those who are truly addicted. Since many people convicted for illegally using drugs were never evaluated by a physician, the assignment of severity for this group was probably much less accurate than that for persons in the older medical groups, with a tendency to overestimate severity among those recently convicted.
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> There is the additional fact that addiction to drugs is often associated with a rapidly developing tolerance to the drug. This tolerance, combined with the excessive cost of illegally obtained drugs, probably means that the addicted person seldom uses enough drugs at any one time to achieve

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4/ Ibid.

5/ Waller, Julian A., "Chronic Medical Conditions and Traffic Safety: Review of the California Experience," New England Journal of Medicine, Vol. 273 (December 23, 1965), pp. 1413-1420.

markedly abnormal physiologic responses as the person addicted to alcohol does. Also, most people addicted to drugs probably do not feel like driving during the fairly brief euphoric state after taking the drug. 6/

TABLE I

ACCIDENT AND VIOLATION RATES FOR PERSONS WITH CHRONIC MEDICAL CONDITIONS

DIAGNOSTIC CATEGORY	ACCIDENTS		VIOLATIONS	
	expected*	observed*	expected+	observed+
Epilepsy	8.2	16.0	3.4	4.7
Cardiovascular Disease	9.0	14.6	2.7	3.6
Diabetes	8.7	15.5	3.3	4.6
Alcoholism	6.8	11.3	2.5	4.6
Drug Usage	8.4	8.6	3.6	6.4
Mental Illness	7.2	15.3	3.0	5.3
Miscellaneous	7.4	20.7	2.8	4.9

* per million vehicle miles.

+ per 100,000 vehicle miles.

The high violation rate of drug abusers, also noted in other studies, may be a reflection of the social rebellion that leads some persons to drug use, according to Waller, rather than a reflection of the drug use per se.

Heroin Addict Survey

A recent study conducted for the Department of Transportation examined the driving records of former heroin addicts participating in methadone maintenance

6/ Ibid., p. 1419.

clinics in New York State. [7] The typical subject of the study was a young male Caucasian. A control group of persons similar in age and place of residence was established in order to be able to match the driving histories of the drug-using group against those of a group substantially similar in all aspects except drug use.

The study examined the driving records of the subjects both during the period when they were active heroin users and during the period when they were receiving methadone. The subjects were also questioned on their drug-taking practices prior to their addiction to heroin, but a lack of motor vehicle records for these earlier years made verification of accidents and violations impossible.

Except for the period when they were active heroin users, the self-reported mileage driven by the subjects puts them close to the national average. During the heroin using period, however, annual average mileage rises dramatically, to 18,814 miles per year, apparently a reflection of "the need to travel in order to maintain a continuous supply of drugs." [8]

The study also revealed that whether or not a person had a driver's license did not significantly influence whether he drove a vehicle, but only how much he drove. During the heroin using period, for example, 74% of the subjects were licensed while 96% reported that they drove cars. Sixty-six percent of those in the methadone maintenance program were licensed, but 94% reported that they drove. [9] The unlicensed drivers, apparently to avoid problems with the law, drove significantly fewer miles a year than the licensed drivers. Not only did the subjects report a considerable amount of driving, they also reported driving immediately after using drugs with some frequency.

Overall, 92% of the subjects reported driving at least once immediately after using a non-opiate drug. Of those who used marihuana, 91% drove at least once immediately after drug-taking. The figures for other types of drugs were: hallucinogens, 64%; amphetamines, 85%; barbiturates, 79%; and cocaine, 79%.

It must be borne in mind that these figures indicate only persons who have driven at least once after using a particular drug; there is no way of knowing from these data the frequency with which driving after drug use took place. For heroin use, however, substantially better data were available. Of the 1,500 subjects who drove during their period of heroin addiction, 65% reported driving daily within an hour of heroin use. [10] Furthermore, 46% of the accidents experienced by the heroin

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7/ Dunlop and Associates, Drug Abuse and Driving Performance (Washington, D. C.: U. S. Department of Transportation, 1972).

8/ Ibid., p. 37.

9/ Ibid., p. 39.

10/ Ibid., p. 46.

addicts occurred when they reported being "high" while 44% of violations were received while "high." These figures, however, are misleading if viewed out of context. While 46% of the addicts' accidents occurred while they were "high," their actual accident rate was essentially similar to the statewide figure.11/

There were 10.25 accident involved drivers per million vehicle miles among the drug users, .91 higher than the 1971 statewide figure not adjusted for age and sex. "Despite the greater expected accident rate, the experimentals during their abuse of heroin were not involved in more accidents of any type than were the controls or the total driver population of New York State of similar age and sex distribution."12/ Furthermore, the patients on methadone maintenance were not involved in any more accidents of any type than the controls.

"It is evident that drug abusers, particularly heroin addicts on the road, are successfully compensating for both their large exposure and any performance degradation produced by the drug. This compensation action is prompted by the fear of discovery, accident and/or arrest for a drug charge. Likewise, the unlicensed drug abusing drivers also appear to be applying extra caution to avoid any notice by the police."13/

In only one area did the drug abusers fare consistently poorer than the control group: the number of violations recorded. A large number of these, however, were equipment and documentation convictions, and the number of these peaked during the heroin using period, when the most driving took place.

"It is also likely that many of these equipment and documentation convictions were an effort by the police officer to insure grounds for stopping the motor vehicle. When an officer stops a car and finds evidence of illegal drugs or the implements used to take them, he is primarily concerned with obtaining a conviction on the drug charge, commonly a felony. Hence, he will attempt to issue a motor vehicle citation on which he is reasonably sure of obtaining a conviction in order to establish his original grounds for stopping the vehicle. A good police officer can generally find an equipment or document violation on virtually any vehicle."14/

This reasoning may well explain, at least in part, why other studies of the driving records of drug users indicate normal accident rates but elevated violation rates.

Since heroin addicts and methadone patients do not experience more accidents than non-drug users of similar age and sex, this study concludes that its data do not support prohibiting either of these groups from driving. And while existing laws against driving under the influence of drugs are not deterring the drug user from

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11/ Ibid., p. 60.

12/ Ibid., p. 66.

13/ Ibid., p. 67.

14/ Ibid., p. 54.

driving, new measures do not appear warranted because "[e]xisting conditions appear to be providing sufficient incentive to make these individuals extremely cautious about their driving." 15/

Arrestee Driver Histories

A study conducted for the Department of Transportation in conjunction with the Bureau of Narcotics and Dangerous Drugs examined the drug using patterns and driving histories of persons arrested for state or municipal crimes in six cities: St. Louis, Los Angeles, San Antonio, New Orleans, Chicago, and New York. (Excluded from the study were all federal prisoners, prisoners held for military charges, incoming transfers, fugitives from other states, and persons arrested for drunk and disorderly, driving while intoxicated, gambling, traffic violations, contempt of court, loitering, violation of probation, jumping bail, and bond forfeiture.) 16/ The arrestees were interviewed and urine samples collected and analyzed for heroin, amphetamines, barbiturates, cocaine and methadone. Those arrestees who were not drug users were used as the control group for the study, and the two groups were quite similar in terms of race, age, and socioeconomic background.

The results of the study not only failed to demonstrate that drug users had poorer driving histories than their non-using peers, but in fact most drug users had better driving histories. Among the drug users, the users of psychedelic drugs such as LSD ranked highest in both conviction and accident rate and were the only group of drug users who ranked at or near the non-drug users on both the hazardous conviction rate and accident rate. The users of psychedelics, amphetamines, tranquilizers and hashish, however, had higher accident rates than other drug users and higher accident rates than non-drug users.

Table II shows the hazardous conviction and accident rates by type of drug used as compared to non-drug users. The accident rates are partly a reflection of the difference in reporting laws in the cities surveyed, with some cities requiring reporting of all property damage accidents of $25 or more, while others required reporting for property damage of $200 or more.

15/ Ibid., p. 68.

16/ Research Triangle Institute, Collection Analysis and Interpretation of Data on Relationship Between Drugs and Driving (Washington, D. C.: U. S. Department of Transportation, 1972), pp. 7-8.

TABLE II

SUMMARY OF CONVICTION AND ACCIDENT RATES BY DRUG FOR THE 865 DRIVERS RESPONDING TO THE QUESTIONNAIRE

DRUG USED	HAZARDOUS CONVICTION	ACCIDENT RATE
Psychedelics	2.7	.63
Amphetamines	2.6	.51
Tranquilizers	2.6	.49
Hashish	2.5	.62
Cocaine	2.5	.41
Barbiturates	2.4	.42
Marihuana	2.4	.44
Morphine	2.3	.45
Heroin	2.1	.41
Special Substances	1.7	.41
Methadone	1.6	.16
Nondrug Users	2.7	.48

Another method that has been used to assess the role of drug use in accident causation is the analysis of biologic samples from fatally injured drivers. These studies usually involve analyzing for drug presence the blood, urine, bile or liver of the deceased driver.

There are several serious drawbacks to the use of the data obtained in this type of study. First, some drugs cannot be detected; marihuana, until recently, could not be identified at all and today only indirectly through the use of body alcohol washings rather than through blood or urine tests.

A more important defect is that data indicating the presence of drugs in a certain percentage of fatally injured drivers do not determine whether or to what degree the presence of these drugs contributed to the accident. "This can be determined only by ... a comparison of the frequency of various drug concentrations in persons who have been involved in crashes and in persons who have been using the roads under similar circumstances of time and place who have not crashed." 1/

Since many drugs can be detected in the urine long after they are ingested, the presence of a drug in the urine of a fatally injured driver is not necessarily evidence that the driver was under the influence of the drug at the time of the accident. The presence of a drug in the blood, however, is a somewhat better indication that a person was experiencing some drug effect at the time of the accident.

Midwest Research Institute Study

A study by the Midwest Research Institute for the Department of Transportation involved analyzing the blood samples of 145 accident victims. 2/ Of the sample, 71 were alcohol free, while 74 contained some alcohol. Sixteen of those samples containing alcohol registered less than .10%; 10 contained between .10 and .15%, and 48 contained greater than .15%.

Of the 71 drivers with no alcohol in their blood, 16 were positive for a drug. Of the 74 drivers with some alcohol in their blood, 20 were also positive for a drug other than alcohol.

The study also found that the most frequently encountered drugs were barbiturates and amphetamines; barbiturates turned up 18 times and amphetamines 10 times in the blood of the 145 drivers. The overall percentage of drugs in fatally injured drivers was 24%, but the study cautioned that the sample was too small to permit hard conclusions to be drawn.

1/ Waller, Julian A., "Drugs and Highway Crashes," Journal of The American Medical Association, Vol. 215, No. 9, (March 1, 1971),p. 1479.

2/ Woodhouse, E. J., The Incidence of Drugs in Fatally Injured Drivers (Washington, D. C.: U. S. Department of Transportation, 1972).

It should be noted that while 24% of the drivers were positive for a drug based on analysis of blood, urine or bile, only 4 blood samples, or 2.68% of the fatally injured drivers examined, were positive for a drug. Since the presence of a drug in the blood is a far more reliable indication that a person is experiencing the effects of a drug than drug presence in the urine or bile, it is possible that the data based on urine and bile inflate the role of drugs in accident causation.

Under a contract with the Department of Transportation, Midwest Research is continuing and expanding this research, with a final report expected in late 1973 or early 1974.

Some data from this ongoing study were unofficially reported in June, and received some press coverage. 3/ The Department of Transportation has not and will not release the data until the study is complete.

According to the news reports, Midwest detected the presence of drugs in almost 28% of 410 fatally injured automobile drivers. Evidence of marihuana was detected in 22% of the fatally injured drivers, while 3.7% of drivers randomly selected to participate in a roadside survey reported smoking marihuana, according to the news reports.

Barbiturates were detected in 84 of the 410 drivers — almost as high a percentage as for marihuana; amphetamines were found in 27, and the sedative meprobamate in 15.

There are several serious difficulties in the interpretation of these data. First, the news reports did not indicate whether these results were based on an analysis of blood or urine, or both. Results based on urine alone are a poor indication that the driver was experiencing a drug effect while driving. The test for marihuana, while it may be the best available today, is the "least reliable of all the tests," according to the chemist directing the research. 4/

Furthermore, federal officials have said that Midwest now concedes that some of the data released were inaccurate, and that mistakes in concentration levels were later discovered.

This type of research often suffers a serious fault; the method in which the samples are obtained. If a coroner sends samples only from drivers thought to be under the influence of a drug, the percent of positive samples is likely to be quite high. The only way to know with some certainty whether drivers are being killed

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3/ "Drug Evidence Found in Deaths on Highways," Richmond News-Leader, June 28, 1973, p. 28.

4/ E. J. Woodhouse, Senior Chemist, Midwest Research Institute, telephone conversation with the author, July 16, 1973.

because of the drug in their system is to know how many drivers on the highways at similar times and places and with similar drug concentrations in their systems are not killed. 5/

California Study of Fatal Accidents

Several years ago, the state of California conducted a fairly exhaustive study of alcohol, drugs and organic factors in fatal single vehicle traffic accidents. 6/ The sample used was 772 California drivers who died within 15 minutes of a single vehicle accident and had usable blood samples. In addition to alcohol, the fatally injured drivers were tested for the presence of barbiturates, tranquilizers, caffeine, and anti-infectives. They were not tested for illegal drugs such as marihuana, heroin or cocaine, nor for amphetamines. There is also no way of knowing whether the legal drugs found were legally prescribed or illegally obtained.

Of the 772 drivers, 66.8% had a blood alcohol concentration of .10% or greater (the legal level of presumptive intoxication). The presence of drugs was detected in 13.2% of the victims. The high percentage of persons positive for both alcohol and drugs may indicate that persons with serious medical and/or psychological problems are combining a variety of psychoactive substances in order to achieve a better state through self-medication.

The most commonly used drugs among those with a positive drug reaction were the barbiturates, with 45% of the men and 55% of the women positive for drugs showing the presence of these substances. The combination of barbiturates and alcohol, both central nervous depressants, may lead to a synergistic effect.

The age distribution of drivers with a positive drug reaction indicates that, for the drugs tested, drug use increased with age, as shown in Table III.

The interpretation of these data must be done carefully, however. The only stimulant tested for was caffeine; no tests were made for amphetamines, perhaps one of the most dangerous drugs in relation to highway safety.

5/ According to Dr. David K. Wiecking, Chief Medical Examiner of Virginia, "It would appear that finding drugs of abuse in motor vehicle fatalities is unusual, in fact quite rare." In a letter to the author dated August 14, 1973, Dr. Wiecking noted that between January and June, 1973, the Central District of Virginia analyzed 12 blood samples for drugs of abuse, and no drugs were found. Twenty-nine specimens of urine and/or bile were analyzed, with only one positive finding, "a mixture of phenothiazines in a known psychiatric patient." Analysis for drug presence, according to Dr. Wiecking, "is complicated by the fact that the chemical procedures to analyze for drugs of abuse are not generally applicable to the most easily obtained specimen, blood."

6/ A Report on Alcohol, Drugs and Organic Factors in Fatal Single Vehicle Traffic Accidents (Sacramento: State of California Transportation Agency, 1967).

TABLE III

AGE DISTRIBUTION OF DRIVERS WITH A POSITIVE DRUG REACTION

AGE	PERCENTAGE
15-19	6.8
20-29	9.8
30-39	9.9
40-49	16.5
50-59	21.4
60-69	21.1
70-79	33.3
Overall	13.2%

Virginia High School Survey

A survey of drug use by Virginia high school students in 1971 developed data that indicated that marihuana and drugs might play a more significant role in fatal accidents among 15-19 year olds than had been suspected. 7/

Using a questionnaire, 12,453 students were asked to report the absolute number of marihuana and other drug related crashes in which they had been personally involved either as a passenger or driver. Of the 298 reported crash involvements, there was an almost even split between the number of crashes attributed to marihuana and the number attributed to other drugs. Fatalities were reported in 50, or 16%, of the 298 crash involvements. Of the 50 reported fatalities, half were attributed to marihuana, and half to drugs other than marihuana.

Extrapolating and interpreting the data, the surveyors estimated that approximately 1.5% of all traffic crashes involving 15-19 year old drivers were marihuana or drug related. Based on the data, the report concluded that approximately 36% of all fatal accidents involving 15-19 year old drivers may be marihuana or drug related.

7/ Ferguson, Wayne S. and Howard, William L., Marihuana and Drug Use and Highway Safety — A Survey of High School Students in Virginia, (Charlottesville: Virginia Highway Research Council, 1971).

It should be noted, however, that the researchers urge caution for the reviewers of the data. It was noted, for example, that the information on traffic crashes was self-reported and was therefore subject to error. It was also noted that the survey did not consider the possibility of mixing alcohol with marihuana and other drugs when driving. Therefore, it is possible that alcohol use was involved in some reported cases, which would make it impossible to determine which agent, if either, caused the crash.

DETECTION OF DRUGS

The backbone of current efforts to combat driving while under the influence of alcohol is the availability of chemical tests which rapidly, easily, inexpensively and accurately determine the degree of a person's intoxication based on an analysis of a sample of his blood or breath.

The use of these tests, and the incorporation in motor vehicle codes of presumptive levels of intoxication, is based upon two important factors. The first is that the state of the art makes it possible to perform the test to accurately determine a person's blood alcohol concentration (BAC). The second is that long experience and experimentation permit matching the results of a particular test against known standards which indicate with reasonable certainty that a person with a given BAC level suffers a certain degree of impairment of driving ability. It is important to remember that a person with a BAC of .10%, the legal level of intoxication in most states, does not have an accident every time he drives, but rather that the odds that he will have an accident are seen to be sufficiently great that the interests of society require that he be considered dangerous per se.

When dealing with the use of drugs, however, the situation is considerably more difficult. For drugs, there is simply nothing comparable to the breath test available for alcohol. And the tests that do exist for determining the presence of drugs were designed for use by the researcher or physician, not the highway patrol. The paucity of data at this time makes it impossible to establish presumptive levels of drug "intoxication."

Part of the difficulty stems from the pharmacological differences between alcohol and other drugs, and part from the differences between different types of drugs.

> The ideal conditions prevailing in ethanol decomposition to carbon dioxide and water, distributing in an organ corresponding to water content in the tissues, etc., cannot be transferred to drugs. In general, it appears that the 'blood level' cannot be regarded as a reliable criterion for the effect of different drugs .... Many active drugs can only be separated with difficulty from their inactivated decomposed forms .... Some drugs in therapeutic doses can be found in the urine many days after ingestion.... Retrogressive calculation that can be done with ethanol cannot be done with most drugs, as their decomposition rates are affected with chronic use of certain drugs and by other factors. 1/

1/ Soehring, K. and Wolters, H. G., "Pharmakologische Grundlagen der Wirkung von arzneitmitteln auf vie Verkehrsturchtigkeit, in Hendbuch der Verhehrsmedizin. Unter Bernecksichtigung aller Verkehrswissenschaften. (Berlin, 1968) quoted in "Psychotropic Drug Use and Driving Risk: A Review and Analysis," Journal of Safety Research, Vol. 2, No. 2 (June 1970), p. 75.

A similarly pessimistic view of the ability to relate drug levels in bodily fluids to performance levels was expressed in an article in the British Medical Journal. "Unlike alcohol ... the absorption of psychotropic drugs may be erratic, their metabolism is often complex (the effects of a drug may be difficult to distinguish from its related metabolites), and excretion is slow — indeed a patient may still be excreting the drug in the urine several weeks after he has taken his last dose. Blood levels of the drug may have little relation to drug effect, and may not correlate with urine levels of the drug." 2/

The increasing general concern over drug abuse has spurred technological advances in testing urine for the presence of drugs. 3/ An analysis for commonly used drugs now costs between $3 and $5 per sample. But advances in urine screening are as yet of little comfort to those in the highway safety field. While the director of a drug treatment clinic wants to know whether his patients have recently used any illicit drugs, highway safety officials must know whether the driver in question was under the influence of a drug at the time he was driving.

Barbiturates, for example, can be detected in the urine long after the drug has ceased to affect the driver. While the primary effects of a barbiturate usually do not last longer than 6 to 8 hours, only 8% of a therapeutic dose of barbital is eliminated in the urine of a normal adult in the first 12 hours; only 20% of the dose is eliminated within 24 hours. Traces can be detected as long as 8 to 12 days after the administration of a single hypnotic dose. 4/

Similarly, a 3-grain dose of secobarbital has been detected in urine four to six days after ingestion. British scientists have reported a method of detecting methaqualone, an increasingly popular drug, up to 48 hours after ingestion. 5/

Danish scientists who have reported on a method of detecting marihuana metabolites in urine have noted that while the effect of the drug lasts for about three hours, their test could detect the presence of the metabolites in urine up to six and seven hours after intake. 6/ Another study found that radioactively labelled THC disappeared from the blood plasma of marihuana smokers with a half life of 28 hours, and with a half life of 57 hours from the blood plasma of non-users.

2/ Betts, T. A.; Clayton, A. B.; and Mackay, G. M., "Effects of Four Commonly-used Tranquilizers on Low-speed Driving Performance Tests," British Medical Journal, No. 4 (1972), p. 580.

3/ Selzer, Melvin and Clayton, Patricia, "Available Techniques for Analyzing Impairing Drugs in Blood and Urine," Journal of Safety Research, Vol. 4, No. 4 (December 1972), pp. 179-188.

4/ Goodman, Louis S., and Gilman, Alfred, (eds.), The Pharmacological Basis of Therapeutics (New York: The MacMillan Co., 1970), pp. 110-111.

5/ British Medical Journal, Jan. 11, 1969.

6/ Anderson, J. M.; Nielson, E.; Schou, Jr.; Steentoft, A.; and Worm, K., "A Specific Method for the Determination of Cannabis Intake by TLC of Urine," Acta Pharmacologica et Toxicologica, Vol. 29, No. 1 (1970), pp. 111-112.

Obviously, while urine and blood testing can show whether a person has used some drug at some point prior to the analysis, the results mean very little in terms of highway safety. If a quantitative analysis was performed, was the level of drug found sufficient to adversely affect ordinary driving performance? In fact, did the person take the drug in question today, yesterday or even last week? And, given these unknowns, can it be said with a reasonable degree of certainty that a particular drug was causally related to a particular accident? Only if driving under the influence of drugs causes a significant increase in crash risk can penalties for mixing drugs and driving be justified in the absence of dangerous driving behavior.

Until these questions are resolved, it will be extremely difficult to use laboratory determinations of the presence of a drug in a person's system as evidence of drug intoxication or influence, and any possible effect on crash risk.

A further difficulty is the varying rates of drug metabolism in different drug users. An experienced drug user may metabolize a given drug much more quickly than a novice, so that the results of testing the bodily fluids of the two may differ for an identical dose of the same drug, with obvious implications for any possible enforcement action.

The key to the effectiveness of a detection system, as noted, is the availability of measures of the impairment caused by given levels of a drug in the blood or urine. Research to this end is under way. However, a large number of drugs are available, and a medically and legally acceptable impairment schedule for each must be developed. For a drug like marihuana, for which no scientifically accepted blood or urine test exists, presumptive levels of intoxication would seem to be a long way off.

ANALYSIS OF VIRGINIA STATUTES CONCERNING DRUGS AND DRIVING

Driving Under the Influence of Drugs

Section 18.1-54 of the Code of Virginia provides that:

> It shall be unlawful for any person to drive or operate any automobile or other motor vehicle ... while under the influence of any narcotic drug or any other self-administered intoxicant or drug of whatsoever nature.

A violation of this section is punishable, for a first offense, by a fine of not less than $200 nor more than $1,000, or by imprisonment for not less than one month nor more than one year, or both. 1/ Conviction also carries with it a six month to one year license revocation, in the discretion of the court. 2/ A subsequent violation of § 18.1-54 within ten years is punishable by a fine of not less than $200 nor more than $1,000 and by imprisonment for not less than one year, 3/ and by a license revocation of three years. 4/

The primary difficulty in interpreting this section is that the COV nowhere defines "under the influence" of a drug. Long experience and considerable research have made possible establishment of presumptive levels of alcoholic intoxication, considerably lessening the difficulty of prosecution for driving under the influence of alcohol. No such presumptive levels exist for drug intoxication or drug influence. A literal reading of the statute means that virtually all drivers, at one time or another, have violated the law. By definition, a drug is a substance which alters a person's psychological or physiological state; any use of any drug means that a person is under its influence, even if that drug is an over-the-counter cold remedy, or the caffeine in one's morning coffee. The problem would seem to be the use of the same terminology used for alcohol. Over the years, "under the influence" has come to have the same meaning as intoxicated. As one court said, "the difference is that of 'Tweedle Dee and Tweedle Dum.' If a man is under the influence of intoxicating liquors, he is intoxicated, and if he is intoxicated within the meaning of this statute, he is under the influence of intoxicating liquor." 5/ A person who has had a beer or two with dinner is rarely thought to be "under the influence" of alcohol. Yet he is, though usually not to any great degree. What has happened is that the legal definition of "under the influence" of drugs has no solid legal or medical meaning, it can mean nothing and it can mean everything.

1/ Va. Code Ann. § 18.1-58.

2/ Va. Code Ann. § 18.1-59.

3/ Va. Code Ann. § 18.1-58.

4/ Va. Code Ann. § 18.1-59.

5/ Holley v. State, 25 Ala. App. 260, 144 So. 535, 536 (1932).

Were prosecutions for driving under the influence of drugs common, perhaps a sufficient body of case law would exist to define the term. But such prosecutions are so rare as to stand more as legal curiosities than as effective precedent. 6/

In addition to the definitional problem encountered with "under the influence", the code also fails to define the substances which § 18.1-54 enumerates as capable of putting one "under the influence:" narcotic drug, self-administered intoxicant or drug of whatsoever nature.

For assistance, we might look to the 1970 Drug Control Act, § 54-524.2, which defines "drug" and "narcotic" drug. Sec. 54-524.2 (b) (12) defines a "drug" as:

> .... (a) articles recognized in the official United States Pharmacopoeia, official Homeopathic Pharmacopoeia of the United States, or official National Formulary, or any supplement to any of them; (b) articles or substances intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals; (c) article or substances, other than food, intended to affect the structure or any function of the body of man or other animals; or (d) articles or substances intended for use as a component of any article specified in clause (a), (b) or (c); but does not include devices or their components, parts or accessories.

Sec. 54-524.2 (b) (17) defines a "narcotic drug" as:

> ... any of the following, whether produced directly or indirectly by extraction from substances of vegetable origin, or independently by means of chemical synthesis, or by a combination of extraction and chemical synthesis:

6/ The Virginia Division of Motor Vehicles reported convictions for driving under the influence of drugs to be as follows:

1972	8	convictions
1971	1	"
1970	1	"
1969	5	"
1968	1	"
1967	0	"
1966	1	"

DMV's computerized record-keeping system did not permit identification of the individuals involved in these cases without searching the entire driver history file, so the nature of these violations could not be examined. Furthermore, DMV reports that some of these convictions are actually for driving under the influence of alcohol, but by a coding error are listed as driving under the influence of drugs.

(a) Opium, opiates, and any salt, compound, derivative, or preparation of opium or opiates;

(b) Any salt, compound, isomer, derivative or preparation thereof which is chemically equivalent or identical with any of the substances referred to in clause (a), but not including the isoquinoline alkaloids of opium;

(c) Opium poppy and poppy straw;

(d) Coca leaves and any salt, compound, derivative, or preparation of coca leaves, and any salt, compound, isomer, derivative, or preparation thereof which is chemically equivalent or identical with any of these substances, but not including decocainized coca leaves or extraction of coca leaves which do not contain cocaine or ecgonine.

Even were these definitions "borrowed" by the vehicle code, they would be of little assistance. While the definition of "narcotic drug" is specific and accurate (except for the inclusion of cocaine, which though addictive, is a stimulant, not a narcotic),[7/] the definition of "drug" is every bit as broad as the vehicle code's "drug of whatsoever nature."

And while such a broad definition might be necessary to effectuate the purposes of a Drug Control Act, a more careful definition is needed if the vehicle code's provision is to have any real meaning.

The seemingly wide sweep of the language of § 18.1-54 is sharply curtailed, however, by the qualification that the "intoxicant or drug of whatsoever nature" must be "self-administered." While "self-administered" could conceivably mean the physical act of ingesting the drug, it is more likely that this term was meant to be used in contradistinction to "prescribed by a physician." If the latter is the case, it disregards the effect of the drug on the safe operation of a motor vehicle and makes the graveman of the offense its licit or illicit ingestion. A person who has taken one black market amphetamine, for example, might be considered to be under the influence of a self-administered drug even though his ability to operate a motor vehicle might be little impaired, while a person who has been given a massive dose of a tranquilizer by his physician would, apparently, not be under the influence of a "self-administered" drug, and could legally drive.

The Uniform Vehicle Code takes the position that the source of a drug has no bearing on the risk created. By focusing on risk creation, it eliminates to an extent the definitional problem associated with the Virginia statute. UVC § 11-902 provides, in part, that

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7/ Goodman, Louis S. and Gilman, Alfred (eds.), The Pharmacological Basis of Therapeutics (New York: The MacMillan Co., 1970) p. 293.

> (a) a person shall not drive or be in actual physical control of any vehicle while:
>
> . b . .
>
> 3. Under the influence of any drug to a degree which renders him incapable of safely driving . . . .
>
> . . .
>
> (b) The fact that any person charged with violating this section is or has been legally entitled to use alcohol or a drug shall not constitute a defense against any charge of violating this section.

The laws of 28 states are in substantial conformity with UVC § 11-902 (a) (3), and 22 states expressly provided that the legal use of a drug is no defense to a violation.

While its logic is unimpeachable, subsection (b) conceivably creates a large class of violators who are unaware of their unlawful act. Recognizing this dilemma, Maryland has adopted a compromise position midway between that of the COV and the UVC. 8/

> The fact that any person charged with a violation of this section is or has been entitled to use the drug under the laws of this state shall not constitute a defense against any charge of violating this section unless such person was unaware that the drug would render him incapable of safely driving a vehicle. (emphasis added).

If the lack of awareness of the risk involved must be proved by the prosecutor, the burden of proof might be so great that few convictions would result. On the other hand, the lack of awareness could be treated as an affirmative defense, requiring the defendant to plead and prove his lack of awareness of the risk in order to invoke the statutory defense.

Some comfort may be provided by a recent act of the Virginia Pharmaceutical Association. In its 1973 convention, the Association adopted a resolution "urging all pharmacists to label medication capable of causing drowsiness with the following or a similar warning, 'MAY CAUSE DROWSINESS. USE CARE WHEN OPERATING A CAR OR DANGEROUS MACHINERY.' — unless otherwise indicated by the prescriber." 9/

An official of the Medical Society of Virginia has said that he feels "sure that the Society's legislative Committee will also urge all physicians to support such labeling directions, when they meet in September." 10/

8/ Md. Stat. Ann. 66½ § 11-902(c).

9/ Resolution 21, Virginia Pharmaceutical Association Convention 1973, adopted June 26, 1973.

10/ Willard C. Osburn, Administrative Assistant, The Medical Society of Virginia, letter to the author dated July 6, 1973.

Denial of Operator's License

Section 46.1-359 of the COV provides that

> The Division [of Motor Vehicles] shall not issue an operator's or chauffeur's license to any person who it has determined is an habitual drunkard or is addicted to the use of any drug which may impair the ability of a person to operate a motor vehicle.

The use of the word "addicted" in this section seriously limits the potential applicability of the license denial sanction. Of the vast number of drugs with the potential to adversely affect driving, relatively few are "addicting" in the established sense of the word. Heroin, of course, is addicting, while tranquilizers are not. Barbiturates can be addicting, marihuana cannot.

While the use of "addicted" limits the applicability of §46.1-359, the phrase "may impair the ability of a person to operate a motor vehicle" includes almost all drugs. "May" would seem to be an unduly broad word to use in light of the limited knowledge of the effects of drugs on driving. Almost any drug "may" impair a person's ability to drive. Here the UVC wording is preferable: a license is to be denied a person if he is an "habitual user of ... any drug to a degree rendering him incapable of safely driving a motor vehicle." 11/ The UVC recognizes that a person may habitually use a drug in non-impairing dose levels, and so not render himself incapable of driving safely. It also recognizes that drugs which are not addicting could threaten highway safety.

It is impossible to know whether this provision of the COV is used with any frequency. One may hazard the guess, however, that it is little used, because it apparently relies on self-reporting of drug use. When an applicant applies for a driver's license, he must respond to this question: Do you have a visual, physical or mental condition that impairs your ability to drive safely? If so, explain." It is unlikely that a person whose drug use might constitute a danger to safe driving will admit to that condition. The Division of Motor Vehicles does not keep statistics on the number of applications refused on this ground.

Revocation of Operator's License

As noted, a first offense conviction for driving under the influence of drugs also carries with it a six month to one year license revocation, in the discretion of the court. 12/ Va. Code Ann. §46.1-417, however, requires the Commissioner of Motor Vehicles to revoke for one year the license of any person convicted of driving under the influence of drugs. This discrepancy is probably due to the amendment of the revocation provision in §18.1-59 in 1972 without the amendment of parallel statutes.

11/ UVC §6-103 (3).

12/ Va. Code. Ann. §18.1-59.

Likewise, § 46.1-362 provides that a person convicted of driving under the influence of drugs shall not be issued a license withon one year of such a conviction.

The sections specifying the revocation period for a second conviction within ten years, §§ 18.1-59 and 46.1-421, both specify a revocation of three years.

Division of Motor Vehicles records reflect 14 license revocations for conviction for driving under the influence of drugs during the fiscal years 1966 through 1973.[13] The discrepancy between the number of convictions for driving under the influence of drugs and the number of revocations for conviction is said to be due to computer coding errors which listed convictions for driving under the influence of alcohol as driving under the influence of drugs.

Under § 46.1-430, the Commissioner of Motor Vehicles may suspend or revoke for not more than one year the license of any person "whenever it is satisfactorily proved at the hearing conducted by the Commissioner or other personnel of the Division designated by him," that the person involved "is addicted to the use of drugs."

"Addicted to the use of drugs" in this context suffers the same defects as it does in § 46.1-359, concerning license issuance. There is, however, a more basic defect in § 46.1-430. Under this section, the Commissioner has the authority to revoke or suspend for "not more than one year." Yet § 46.1-359 requires the Commissioner to refuse to grant a license to a person "addicted to the use of drugs which may impair his ability to drive."

The COV requires that the superintendent or chief medical officer of any institution operated or licensed by the State Hospital Board report to the Commissioner of Motor Vehicles the impending release of any patient not competent to operate a motor vehicle by reason of mental illness, mental deficiency, epilepsy, inebriety or drug addiction.[14]

Upon receiving this notification, the Commissioner "shall forthwith suspend" the license of the person involved. The suspension remains in effect until the person furnishes the Division with satisfactory medical evidence that he is competent to drive safely, or with a court order restoring his competency.[15] A conflict in medical evidence concerning a person's competence would be resolved by the Medical Advisory Board. According to the Division of Motor Vehicles, this section is rarely used in connection with drug addiction.

13/ R. E. Spring, Driver Services Administrator, Division of Motor Vehicles, Commonwealth of Virginia, letter to the author dated July 13, 1973.

14/ Va. Code Ann. § 46.1-429.

15/ Va. Code Ann. § 46.1-427.

Implied Consent Statute

Virginia's implied consent statute, § 18.1-55.1, provides, in part, that

> Any person whether licensed by Virginia or not, who operates a motor vehicle upon a public highway in this State on and after January one, nineteen hundred seventy-three shall be deemed thereby, as a condition of such operation, to have consented to have a sample of his blood or breath taken for a chemical test to determine the alcoholic content of his blood, if such person is arrested for a violation of § 18.1-54 or of a similar ordinance of any county, city or town within two hours of the alleged offense.

While § 18.1-54 covers driving under the influence of drugs as well as alcohol, the implied consent law applies only to alcohol. The use of the implied consent law is a valuable enforcement tool in prosecuting drinking drivers. Is amending the implied consent law to include testing for the presence of drugs justified, and if justified, would it be useful?

Based on the present knowledge about drugs and driving, the answer to both of these questions must be no. As discussed throughout this report, there is little scientific evidence to support a conclusion that mixing drugs and driving creates a significant risk to those who use the highways. In the absence of a correlation between drug use and highway crashes, a constitutional question may be raised by including drugs in an implied consent law. New York is one of three states whose implied consent laws do extend to testing for the presence of drugs. In discussing the New York law, one writer argued as follows:

> Inability to predict accident involvement on the basis of drug usage suggests that there may be no rational relationship between that predictor and highway safety. If driver licensing is a manifestation of the constitutionally protected right to travel, it may be appropriate to declare unconstitutional this portion of the New York implied consent statute. Is there justification for searching the blood to determine drug content when the resulting prediction may be entirely fortuitous? 16/

Were the Virginia statute amended to include testing for the presence of drugs, the results of such a test would prove little. As discussed previously, there are no tables in existence today which permit matching a given level of drug concentration in the blood with a given level of impairment. In the absence of such a correlation, there can be no presumptive levels of drug intoxication. Without such presumptive levels, testing for the presence of drugs is not a particularly important enforcement tool.

16/ Reese, John H., Power, Policy, People: A Study of Driver Licensing Administration, Highway Research Board Special Report #123 (Washington, D. C.: National Academy of Sciences, 1971), pp. 143-144.

The absence of presumptive levels of drug intoxication does not mean, however, that a person whose driving is seriously impaired because of drug use can escape apprehension. Impairment, if present, can result in erratic or reckless driving, and a police officer can cite the individual under appropriate provision of the motor vehicle code. The penalty for reckless driving, § 18.1-9, for example, is as severe as that for driving under the influence of drugs.

Thus, the driver who because of drug use may operate his vehicle in a manner inimical to highway safety can be prosecuted for those acts he actually commits. The use of presumptive levels of intoxication means only that a driver does not actually have to do something dangerous or wrong in operating his vehicle in order to be convicted. It is, rather, a case of probability. The odds that a person with a BAC of .10% will have an accident are sufficiently great that society makes it a crime for him to drive. Because the data on the connection between drugs and driving do not permit us to calculate these odds, if they exist, it is premature to make driving under the influence of drugs a "strict liability" offense.

APPENDIX I

COMMITTEE AMENDMENT IN THE NATURE OF A
SUBSTITUTE FOR HOUSE JOINT RESOLUTION NO. 101

(Proposed by the House Committee on Rules)

Directing the Highway Safety Division to study dangers caused by certain drivers.

WHEREAS, the State has long had statutes which deal effectively with the drinking driver, and highway safety has been materially improved as a result thereof; and

WHEREAS, there is increasing use in our society of drugs of various types which affect not only the muscular reaction time but also may change and impair the mental, psychological and judgmental abilities of drivers who take such drugs; and

WHEREAS, although there is an effective method to determine the percentage of alcohol in the blood of a person arrested on suspicion of drunk driving, there is no comparable feasible method available to determine whether or not a driver is operating his motor vehicle while under the influence of drugs, and the time has come for a study to be made of this situation; now, therefore, be it

RESOLVED by the House of Delegates, the Senate of Virginia concurring, That the Highway Safety Division is charged with the duty of learning the extent of the danger caused by the driver who operates his vehicle while under the influence of any drug or combination of drugs. The Division shall determine to what extent tests exist to determine whether or not a driver is under the influence of drugs and, if so, to what degree. The Division shall consider the practices of other states in these areas and determine whether or not they can be used in Virginia. All agencies of the State shall assist the Division in its work upon request. The Division shall conclude its study and make its report to the Governor and the General Assembly no later than October one, nineteen hundred seventy-three.

(Agreed to by The House on March 6, 1972)

(Agreed to by The Senate on March 10, 1972)

APPENDIX II

SURVEY OF STATE LAWS ON DRIVING UNDER THE INFLUENCE OF DRUGS

An examination of the laws of the fifty states and the District of Columbia dealing with driving under the influence of drugs reveals, to a greater or lesser extent, popular assumptions and misconceptions concerning drugs and their influence on driving behavior. By and large, the more recently a state has amended its driving under the influence of drugs law, the more accurately that statute reflects our current knowledge about the subject. However, even the most recent enactments contain some potential defects caused by assuming the validity of longheld beliefs.

The Uniform Vehicle Code, which often serves as the model for state action, assumes that any drug taken in sufficient quantity may render a person incapable of driving safely.[1/] In this regard, the UVC takes a more modern view than the other statutes still in force (and the older UVC provision) which prohibit driving under the influence of narcotic drugs only. Twenty-nine states still assume that a habitual user of narcotics is unable to properly operate a motor vehicle sufficiently often to justify making it unlawful for him to drive at any time, whether or not he has used the drug prior to driving. While this provision may reflect our impression of the herion addict, it finds little support in the research. One study shows that heroin addicts drive about as safely as drivers not addicted to heroin, adjusted for age and sex. Likewise, a majority of the states provide that a license will not be issued to any habitual user of narcotics. This provision is also a reflection of popular assumptions not supported by research.

The mere fact that all states and the District of Columbia have some sort of statute regarding driving under the influence of drugs indicates that such driving is perceived as a problem. From the time of their enactment, however, these statutes have tended to reflect popular prejudices rather than scientific fact. Even today, with a great deal of research behind us, the best we can say is that drugs may have an effect on driving performance. The nature and scope of that effect, however, remain to be seen. To the extent that this is true, almost all statutes are too severe, since they often provide strict sanctions for conduct prohibited on the basis of unproven assumptions.

1/ UVC §11-902(a)3.

To briefly summarize the state of the nation's laws dealing with driving under the influence of drugs, of the fifty states and the District of Columbia:

- 4 prohibit driving under the influence of narcotic drugs only;
- 28 prohibit driving under the influence of "any drug" or "under the influence of any drug which renders a driver incapable of safely driving";
- 19 prohibit driving under the influence of a variety of enumerated drugs, but fall short of prohibiting driving under the influence of "any drug";
- 29 states make it illegal per se for any habitual user of narcotic drugs to drive, whether or not the habitual user is under the influence of narcotic drugs at the time of driving;
- 22 states provide that the legal use of a drug is no defense to a violation of the statute;
- 16 states provide that a license will not be issued to a person who is a habitual user of any drug to a degree that renders him incapable of safely driving;
- 18 provide that a license will not be issued to a person addicted to the use of narcotics;
- 5 provide that a license shall not be issued to a person addicted to the use of narcotics or a person who is a habitual user of certain drugs; and
- 3 include testing for the presence of drugs in their implied consent statutes.

A survey of state laws follows:[2/]

ALABAMA (Code of Alabama)

Title 36 § 2 makes it unlawful for a "habitual user of narcotic drugs" to drive upon any highway.

Title 36 § 66 provides that a license shall not be issued to any person who is addicted to the use of narcotic drugs.

[2/] Penalties for violation of these statutes are summarized in Appendix III.

ALASKA (Alaska Statutes)

Prohibits driving under the influence of narcotic drugs only.

Section 28.15.030 provides that an operator's license shall not be issued to a person who is "an habitual user of narcotic drugs, or is an habitual user of any drug to a degree which makes him incapable of safely operating a motor vehicle. . . ."

ARIZONA (Arizona Revised Statutes)

Section 28-692 (I) makes it unlawful for any person who is a habitual user of or under the influence of any narcotic drug or who is under the influence of any other drug to a degree which renders him incapable of safely driving to drive within the state.

Legal use of a drug is no defense to a violation.

Section 28-692.01 A provides that "If in the court's opinion the offender has the problem of habitual abuse of alcohol or drugs, the court may require the person to obtain treatment under its supervision."

Section 23-413 provides that a license shall not be issued to a person addicted to the use of narcotic drugs.

ARKANSAS (Arkansas Statutes Annotated)

Section 75-1026.1 makes it unlawful for a person to drive if he is a habitual user of or under the influence of narcotics, or he is under the influence of any drug to a degree which renders him incapable of safely driving.

Legal use of a drug is no defense to a violation.

Section 75-309(4) provides that a license shall not be issued to a person who is addicted to the use of narcotic drugs.

CALIFORNIA (Annotated California Codes)

Vehicle Code § 23105 makes it unlawful to drive while under the influence of a drug, while § 23102(a) makes it unlawful to drive while under the combined influence of intoxicating liquor and any drug.

"Drug" is defined by § 312 as "any substance or combination of substances, other than alcohol, which could so affect the nervous system, brain or muscles of a person as to impair, to an appreciable degree, his ability to drive a vehicle in the manner that any ordinary prudent or cautious man, in full possession of his faculties, using reasonable care, would drive a similar vehicle under like conditions."

Section 23107 provides that the legal use of a drug is no defense to a violation of § 23105.

Section 12805 provides that a driver's license shall not be issued to any person "who is addicted to the use of, or is an habitual user of, any drug to a degree that the person is rendered incapable of safely operating a motor vehicle. . . ." This ban is relaxed, however, for narcotic addicts participating in an approved methadone maintenance treatment program, who "may be issued a license subject to reasonable terms and conditions if such drug usage does not affect the applicant's ability to exercise reasonable and ordinary control in operating a motor vehicle upon the highway." § 12806.

COLORADO (Colorado Revised Statutes)

Section 13-5-30 (4) makes it unlawful for "any person who is an habitual user of or under the influence of any narcotic drug, or who is under the influence of any drug to a degree which renders him incapable of safely operating a motor vehicle, to drive a motor vehicle within this state."

The legal use of a drug is no defense to a violation.

Section 13-4-3 (5) provides that a license shall not be issued to a person addicted to the use of narcotic drugs.

CONNECTICUT (General Statutes Annotated)

Section 14-227 (a) prohibits driving under the influence of "any drug", or under the influence of a combination of intoxicating liquor and drugs.

DELAWARE (Delaware Code Annotated)

Title 21 section 4176(a) prohibits driving while under the influence of "any drug", or any combination of drugs and intoxicating liquor.

Title 21 section 2706(b) (3) provides that a license shall not be issued to a narcotic addict.

DISTRICT OF COLUMBIA (District of Columbia Code Encyclopedia)

Section 40-609(b) prohibits driving under the influence of narcotic drugs only.

FLORIDA (Florida Statutes Annotated)

Section 316.028(1) makes it unlawful for any person "who is under the influence of . . . marihuana or narcotic drugs . . . model glue . . . or barbiturates, central nervous system stimulants or any other drug to which the drug abuse laws of the United States apply . . ., when affected to the extent that his normal faculties are impaired, to drive or be in the actual physical control of any vehicle within this state."

Section 322.05(4) withholds a driver's license from anyone who is "an habitual user of narcotic drugs, or is an habitual user of any other drug to a degree which renders him incapable of safely driving a motor vehicle."

GEORGIA (Georgia Code Annotated)

Section 68-1625(c) makes it unlawful for any person who is a habitual user of, or under the influence of, any narcotic drug, or who is under the influence of any other drug to a degree which renders him incapable of safely driving to operate a motor vehicle.

HAWAII (Hawaii Revised Statutes)

Section 291-7 prohibits operation of a motor vehicle by a person who is under the influence of a drug "to a degree which renders him incapable of operating such vehicle in a careful and prudent manner." The legal use of a drug is no defense to a violation.

Section 286-104 (2) provides that a license shall not be issued to any person "who has been adjudged . . . an addict to the use of narcotic drugs by a court of competent jurisdiction."

IDAHO (Idaho Code)

Section 49-1102(c) makes it unlawful for any person "who is a habitual user of, or under the influence of any narcotic drug, or who is under the influence of any other drug or any combination of intoxicating liquor and any drug to a degree which renders

him incapable of safely driving a motor vehicle, to drive a motor vehicle within this state." The legal use of a drug is no defense to a violation.

Section 49-309(4) provides that a license shall not be issued to a person addicted to the use of narcotic drugs.

ILLINOIS (Illinois Annotated Statutes)

Art. 95½ Sec. 11-501(b) makes it unlawful for any person "who is an habitual user of or under the influence of any narcotic drug or who is under the influence of any other drug to a degree which renders him incapable of safely driving a vehicle" to drive. The legal use of a drug is no defense to a violation.

Art. 95½ Sec. 6-103(4) provides that a license shall not be issued to any person who is "a habitual user of narcotic drugs, or is a user of any other drug to a degree which renders him incapable of safely driving a motor vehicle."

INDIANA (Indiana Statutes Annotated)

Section 47-2001(b) makes it unlawful for any person to drive while he is "unlawfully under the influence of narcotic or other habit-forming or dangerous, depressant or stimulant drugs . . .".

By § 47-200c(a), a driver gives his implied consent for a chemical test to determine if he is "intoxicated". Section 47-2003d defines "intoxication" as meaning, "the same as the term'under the influence', i.e., an impaired condition of thought and action and the loss of normal control of one's faculties to a marked degree, caused by the use of alcohol or drugs, or a combination of alcohol and drugs, to such an extent as to endanger other persons using the public highways." (emphasis added)

Section 47-2704(c) provides that a license shall not be issued to any person who "is addicted to the use of narcotics or other habit-forming or dangerous, depressant or stimulant drugs."

IOWA (Iowa Code Annotated)

Section 321.281 prohibits driving under the influence of narcotic, hypnotic or other drugs, or any combination of these substances and alcohol. This prohibition does not apply to a person who took a drug prescribed by and taken in accordance with the directions of a reputable doctor of medicine. This exception does not apply if any alcohol was consumed or if the doctor directed the patient not to drive.

For a person convicted of a second offense of this section, a court may, in its discretion, commit the defendant for treatment of drug addiction or dependency to any hospital or institution in the state providing such treatment. §281.281.

Section 321.177(4) provides that a license shall not be issued to any person addicted to the use of narcotics.

KANSAS (Kansas Statutes Annotated)

Section 8-530(b) makes it unlawful for any person who is a "habitual user of or under the influence of any narcotic, hypnotic, somnifacient or stimulating drug or who is under the influence of any other drug to a degree which renders him incapable of safely driving" to operate a motor vehicle. Legal use of a drug is no defense to a violation.

Section 8-237(5) provides that no license shall be issued to any person who is "an habitual user of narcotic drugs, or is an habitual user of any other drug to a degree which renders him incapable of safely driving. . . ."

KENTUCKY (Kentucky Revised Statutes)

Section 189-520 prohibits driving "under the influence of any drug which may impair one's driving ability."

Section 189.440(4) provides that a license shall not be issued to a "drug addict".

LOUISIANA (Louisiana Statutes Annotated)

Title 14 section 98 makes it unlawful to drive while under the influence of "narcotic drugs, central nervous system stimulants, hallucinogenic drugs or barbiturates."

MAINE (Maine Revised Statutes Annotated)

Art. 29 section 1312 prohibits driving while "under the influence of . . . drugs."

MARYLAND (Annotated Code of Maryland)

Article $66\frac{1}{2}$ § 11-902(c) makes it unlawful to drive while "under the influence of any narcotic drug or while under the influence of any other drug to a degree which

renders him incapable of safely driving a vehicle." The lawful use of a drug "shall not constitute a defense . . . unless such person was unaware that the drug would render him incapable of safely driving a vehicle."

Article 66½ § 6-103(3) provides that a license shall not be issued to any person who is "an habitual user of narcotic drugs, or an habitual user of any other drug to a degree which renders him incapable of safely driving a motor vehicle. . . ."

MASSACHUSETTS (Massachusetts General Laws Annotated)

Article 90 § 24(b) prohibits driving under the influence of marihuana, narcotic drugs, depressant or stimulant substances, or the vapors of glue.

MICHIGAN (Michigan Compiled Laws Annotated)

Section 257.625(a) makes it unlawful for any person "whether licensed or not who is an habitual user of narcotic drugs, barbital or any derivative of barbital, or any person who is under the influence of . . . narcotic drugs, barbital or any derivative of barbital" to drive.

Section 257.625b (a) makes it unlawful for a person to drive when "due to the consumption of . . . narcotic drugs, barbital or any derivative of barbital, he has visibly impaired his ability to operate the vehicle."

Section 257.303 (4) provides that a license shall not be issued to a narcotic addict.

MINNESOTA (Minnesota Statutes Annotated)

Section 169.121 makes it unlawful for a person who is a habitual user of narcotic drugs, or who is under the influence of narcotic drugs, or who is under the influence of narcotic drugs and alcohol, to drive.

Section 171.04 provides that a license shall not be issued to a narcotic addict.

MISSISSIPPI (Mississippi Code Annotated)

Section 8175-02 makes it unlawful for "a person who is a habitual user of narcotic drugs or under the influence of narcotic drugs, marihuana or barbiturates or patent medicine or other drugs by whatsoever name called which, if drunk or taken

to excess, will produce intoxication, to drive or otherwise operate a vehicle within this state."

Section 8093 provides that a license shall not be issued to a narcotic addict.

MISSOURI (Annotated Missouri Statutes)

Section 564.445 makes it unlawful for any person who is a "habitual user of or under the influence of any narcotic drug or who is under the influence of any other drug to a degree which renders him incapable of operating a motor vehicle" to drive. Legal use of a drug is no defense to a violation.

Section 302.060 provides that a license shall not be issued to a narcotic addict.

MONTANA (Revised Codes of Montana)

Section 32-2142(c) makes it unlawful for a person who is a habitual user of or under the influence of a narcotic drug or under the influence of any other drug to a degree which renders him incapable of safely driving to drive. The legal use of a drug is no defense to a violation. Section 31-149(b), however, concerning the mandatory revocation of licenses, provides for the mandatory revocation of the license of a person convicted of driving "under the influence of . . . narcotic drug, or knowingly or willingly under the influence of any other drug to a degree which renders him incapable of safely driving. . . ." (emphasis added)

Section 31-127(4) provides that a license shall not be issued to a narcotic addict.

NEBRASKA (Revised Statutes of Nebraska)

Section 39-727 prohibits driving under the influence of "any drug."

NEVADA (Nevada Revised Statutes)

Section 484.379(2) makes it unlawful for any person "who is an habitual user of or under the influence of any controlled substance . . ., or any person who inhales, ingests, applies or otherwise uses any chemical, poison or organic solvent, or any compound or combination of any chemical, poison or organic solvent, to a degree which renders him incapable of safely driving or steering a vehicle to drive or steer a vehicle within this state." The legal use of a drug is no defense to a violation.

Section 483.250 provides that a license shall not be issued to any person "addicted to the use of narcotic drugs or dangerous drugs."

NEW HAMPSHIRE (New Hampshire Revised Statutes Annotated)

Section 262-A:62 makes it unlawful to drive under the influence of any "controlled drug."

NEW JERSEY (New Jersey Statutes Annotated)

Section 39:4-50 makes it unlawful to drive while under the influence of any "narcotic, hallucinogenic or habit-producing drug."

NEW MEXICO (New Mexico Statutes)

Section 64-22-2 makes it unlawful for a person who is an habitual user of or under the influence of any narcotic drug, or under the influence of any drug to a degree which renders him incapable of safely driving, to operate a motor vehicle. The legal use of a drug is no defense to a violation.

Section 64-13-40(c) provides that a license shall not be issued to an "habitual user of narcotic drugs or an habitual user of any drug to a degree which renders him incapable of safely driving a motor vehicle."

NEW YORK (Consolidated Laws of New York Annotated)

Vehicle and Traffic Code § 1192 provides that no person shall operate a motor vehicle "while his ability to operate such a motor vehicle is impaired by the use of a drug. . . ." Vehicle and Traffic Code § 114-a defines a drug as follows:

> The term "drug" when used in this chapter means and includes the following: (1) Depressant drug. Any drug which contains any quantity of barbituric acid or any of the salts of barbituric acid, or any derivative of barbituric acid which has been designated by the commissioner of health as habit forming, or any other drug which contains any quantity of a substance which the commissioner of health, after investigation, has found to have, and by regulation designates as having, a potential for abuse because of its depressant effect of the central nervous system.
>
> (2) Hallucinogenic drug. Any drug which contains any quantity of stramonium, mescaline or peyote, lysergic acid dielhylomide and psilocybin, or any salts or derivative or compounds of any preparations or mixtures thereof.

(3) Narcotic drug. Any drug which contains any quantity of opium, coca leaves, marihuana (cannabis, sativa), pethidine (isonipecaine, meperidine), and opiates or their compound, manufacture, salt, alkaloid, or derivative, and every substance neither chemically nor physically distinguishable from them and exempted and excepted preparations containing such drugs or their derivatives, by whatsoever trade name identified and whether produced directly or indirectly by extraction from substances of vegetable origin, or independently by means of chemical synthesis or by a combination of extraction and chemical synthesis, as the same are designated in the federal narcotic laws and as specified in the administrative rules and regulations on narcotic control as promulgated by the commissioner of health pursuant to the authority vested in him under section thirty-three hundred two of the public health law.

(4) Stimulant drug. Any drug which contains any quantity of amphetamine or any of its optical isomers; any salt of amphetamine or any salt of an optical isomer of amphetamine; or any substance which the commissioner of health, after investigation has found to be, and by regulation designated as, habit forming because of its stimulant effect of the central nervous system.

The implied consent law, § 1194, specifically extends to testing for drugs as well as alcohol.

NORTH CAROLINA (General Statutes of North Carolina)

Section 20-139 (a), (b) makes it unlawful for any habitual user of narcotic drugs to drive, and makes it unlawful for any person "who is under the influence of any narcotic drug or who is under the influence of any other drug to such a degree that his physical or mental faculties are appreicably impaired to drive."

Section 20-9(c) provides that a license shall not be issued to any person who "is an habitual user of narcotic drugs or barbiturates, whether or not such use be in accordance with the prescription of a physician."

NORTH DAKOTA (North Dakota Century Code)

Section 39-08-01 prohibits driving by any person who is an habitual user of or under the influence of narcotic drugs.

Section 39-06-03 provides that a license shall not be issued to any person who "is an habitual user of narcotic drugs, or is an habitual user of any drug to a degree which renders him incapable of safely driving a motor vehicle."

OHIO (Ohio Revised Code Annotated)

Section 4511.19 prohibits driving under the influence of "any drug of abuse."

Section 4507.08(A) provides that a license shall not be issued to any person addicted to the use of narcotics.

OKLAHOMA (Oklahoma Statutes Annotated)

Title 47 § 11-902(b) makes it unlawful for any person who is an habitual user of or under the influence of any substance included in the Uniform Controlled Substances Act or who is under the influence of any other drug to a degree which renders him incapable of safely driving to operate a motor vehicle. The legal use of a drug is no defense to a violation.

Title 47 § 6-103(4) provides that a license will not be issued to any person who is "an habitual user of narcotic drugs, or is an habitual user of any drug to a degree which renders him incapable of safely driving a motor vehicle."

OREGON (Oregon Revised Statutes)

Section 483.992(2) prohibits driving under the influence of "dangerous drugs or narcotic drugs." Dangerous drugs are those so defined in the Controlled Substances Act, § 475.010, or so defined by the State Drug Advisory Council.

Section 482.120(1) provides that a license shall not be issued to any person addicted to the use of narcotics.

PENNSYLVANIA (Pennsylvania Statutes Annotated)

Article 75 § 1037 prohibits driving under the influence of narcotic or habit-producing drugs.

Article 75 § 604 (5) provides that a license shall not be issued to any person addicted to the use of narcotics.

RHODE ISLAND (General Laws of Rhode Island)

Section 31-27-2 makes it unlawful for any person who is an habitual user of or under the influence of any narcotic drug or barbiturate or any central nervous system stimulant to a degree which renders him incapable of safely operating a vehicle to drive.

Section 31-10-3(4) provides that a license shall not be issued to any person who is a habitual user of narcotic drugs, or is a habitual user of any other drug to a degree which renders him incapable of safely operating a motor vehicle.

SOUTH CAROLINA (Code of Laws of South Carolina)

Section 46-343 makes it unlawful for any person who is a habitual user of narcotic drugs or any person who is under the influence of narcotic drugs, baribturates, paraldehydes or drugs, herbs or any other substance of like character, whether synthetic or natural to drive a vehicle.

Section 46-154 provides a license shall not be issued to any person who is a habitual user of narcotic drugs or a habitual user of any other drug to a degree which renders him incapable of safely driving a motor vehicle.

SOUTH DAKOTA (South Dakota Compiled Laws)

Section 329-23-1 makes it unlawful for any person, whether licensed or not, who is a habitual user of narcotic drugs or who is under the influence of any drug, to operate a motor vehicle.

Section 32-12-31 provides that a license shall not be issued to any person who is a habitual user of narcotic drugs or is a habitual user of any other drug to a degree which renders him incapable of safely driving a motor vehicle.

TENNESSEE (Tennessee Code Annotated)

Section 59-1031 prohibits driving under the influence of narcotic drugs or "drugs producing stimulating effects on the central nervous system." The law further provides that

> For the purpose of this section drugs producing stimulating effects on the central nervous system shall include the salts of barbituric acid, also known as malonyl urea, or any

> compound, derivatives or mixtures thereof that may be used for producing hypnotic or somnifacient effects, and includes amphetamines, desoxyephedrine or compounds or mixtures thereof, including all derivatives of phenolethylamine or any of the salts thereof, except preparations intended for use in the nose and unfit for internal use.

Section 59-1034 provides that the legal use of narcotic drugs or "barbital drugs" is no defense to a violation.

Section 59-705(d) provides that a license shall not be issued to a narcotic addict.

TEXAS (Texas Statutes Annotated)

Article 6701d § 50 of the Civil Statutes makes it unlawful for any person who is a habitual user of or under the influence of any narcotic drug or who is under the influence of any other drug to a degree which renders him incapable of safely driving to operate a motor vehicle. The legal use of a drug is no defense to a violation.

Article 6687b § 4 (5) provides that a license shall not be issued to any person who is addicted to the use of "narcotic drugs or other drugs that render a person incapable of driving."

Article 6687b § 30 provides that:

> It shall be unlawful for any person to act as an operator, commercial driver, or chauffeur who is . . . addicted to the use of narcotic drugs . . . and any finding by any court of competent jurisdiction that any person holding an operator's license, commercial operator's license or chauffeur's licnese . . . is . . . addicted to the use of narcotics, shall carry with it a revocation of such . . . license. . . .

Article 802a-1 of the Penal Code provides that any person who operates a motor vehicle upon a public road or highway while under the influence of any narcotic drug, "and while so driving or operating such . . . motor vehicle shall, through accident or mistake, do another act which, if voluntarily done would be a felony, shall receive the punishment affixed to such felony offense, unless such person in defense prove that such narcotic drug was legally administered under the law of the State of Texas."

UTAH (Utah Code Annotated)

Section 41-6-44(c) makes it unlawful for a person who is a habitual user of or under the influence of any narcotic drug or under the influence of any drug to a degree

which renders him incapable of safely driving to operate a motor vehicle. The legal use of a drug is no defense to a violation.

Section 41-2-5(3) provides that a license shall not be issued to any person who is a habitual user of narcotic drugs or a habitual user of any other drug to a degree which renders him incapable of safely driving.

VERMONT (Vermont Statutes Annotated)

Title 23 § 1201(d) makes it unlawful for any person who is a habitual user of or under the influence of any narcotic drug or who is under the influence of any other drug, substance or inhalant other than intoxicating liquor to a degree which renders him incapable of safely operating a vehicle to operate, attempt to operate or be in actual physical control of a vehicle. The legal use of a drug is no defense to a violation.

Title 23 § 1202, the implied consent law, specifically includes consent to taking a sample of blood, breath, urine or saliva to determine drug as well as alcohol content.

VIRGINIA (Virginia Code Annotated)

Section 18.1-54 makes it unlawful to operate a motor vehicle "while under the influence of any narcotic drug or any other self-administered intoxicant or drug of whatsoever nature."

Section 46.1-359 provides that the Division of Motor Vehicles shall not issue a license to any person "who it has determined . . . is addicted to the use of any drug which may impair the ability of a person to operate a motor vehicle."

WASHINGTON (Revised Code of Washington)

Section 46.61.510 makes it unlawful for any person who is an habitual user of or under the influence of any narcotic drug or under the influence of any other drug to a degree which renders him incapable of safely driving to operate a motor vehicle. The legal use of a drug is no defense to a violation.

Section 46.20.031(4) provides that a license shall not be issued to any person who is a habitual user of narcotic drugs, or is a habitual user of any other drug to a degree which renders him incapable of safely driving a motor vehicle.

WEST VIRGINIA (West Virginia Code)

Section 17C-5-2(b) makes it unlawful for any person who is a habitual user of or under the influence of any narcotic drug or under the influence of any drug to a degree which renders him incapable of safely driving to operate a motor vehicle.

Section 17B-2-3(4) provides that a license shall not be issued to any person addicted to the use of narcotic drugs.

WISCONSIN (Wisconsin Statutes Annotated)

Section 346.33 makes it unlawful for any person who is a habitual user of or under the influence of any controlled substance to operate a motor vehicle. A controlled substance is defined in section 161.01(4) as any substance in schedules I through V of the Controlled Substances Act, in short, virtually all illegal and prescription drugs.

Section 343.06(4) provides that a license shall not be issued to any person addicted to the use of a controlled substance "unless one of the following conditions is fulfilled and then only in the discretion of the administrator:

> (a) The applicant at the time of application has been legally declared to have recovered; or
> (b) The applicant, in case he has been institutionalized, exhibits the certificate of the superintendent of the institution to the effect that the applicant has recovered or has been absolutely or conditionally released from the institution, and in the superintendent's opinion, is competent to drive a motor vehicle; or
> (c) The applicant, in lieu of the certificate specified in par. (b), submits to such medical or other examination as the division directs for the purpose of determining his recovery or his competency to drive a motor vehicle.

WYOMING (Wyoming Statutes)

Section 31-129(c) makes it unlawful for any person who is a habitual user of or under the influence of any narcotic drug or under the influence of any other drug to a degree which renders him incapable of safely driving to operate a motor vehicle. The legal use of a drug is no defense to a violation.

APPENDIX III

Symbols: NLT — not less than
X — and/or both
+ — and
* — discretionary

STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Alabama (Code of Alabama)	$100-$1,000 Title 36 § 2	X	0-1 yr. Title 36 § 2	0-1 yr. * Title 36 § 2	
Alaska (Alaska Statutes)	$0-$1,000 § 28.35.030	X	0-1 yr. § 28.35.030	30 days* § 28.15.220 (a) (1)	
Arizona (Arizona Revised Statutes)	$100-$300* § 28-692.01 (A)	+	1 da.-6 mo. § 28-692.01 (A)	0-6 mo. § 28-692.01 (A)	Court may require the defendant to obtain treatment under its supervision.
Arkansas (Arkansas Statutes Annotated)	$30-$500 § 75-1029	+	NLT 1 da.-30 da. § 75-1029	0-1 yr. * § 75-1029	
California (Annotated California Codes)	$250-$500 Veh. Code § 23105 (d)	X	30 da.-60 da. Veh. Code § 23105 (d)	0-6 mo. Veh. Code § 13201 (a)	§ 23105 (e) authorizes impounding the vehicle of any person under 18 who has been convicted of driving while under the influence of drugs or while being an addict.
Colorado (Colorado Revised Statutes)	$100-$1,000 § 13-5-30 (5)	X	1 da.-1 yr. § 13-5-30 (5)	1 yr. (Mandatory) § 13-4-23 (b)	Mandatory suspension under point system.

Symbols: NLT -- not less than
X — and/or both
+ — and
* — discretionary

STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Connecticut (General Statutes Annotated)	$150-$500 §14-227 a (e)	X	0-6 mo. §14-227 a (e)	1 yr. (Mandatory) § 14-111 (b)	
Delaware (Delaware Code Annotated)	$200-$1,000 21 § 4176 (a)	X	60 da.-6 mo. 21 § 4176 (a)	1 yr. (Mandatory) 21 § 4176 (b)	
District of Columbia (District of Columbia Code Encyclopedia)	$0-$500 § 40-609 (b)	X	0-6 mo. § 40-609 (b)	6 mo. minimum (Mandatory) § 40-609 (d) (1) § 40-302 (b)	
Florida (Florida Statutes Annotated)	$25-$500 Laws, 1971,c. 71-136, § 171 Laws, 1970,c. 70-143, § 1	X	0-6 mo.	3 mo.-1 yr. 322.26	
Georgia (Georgia Code Annotated)				30 da. 68-9927 (1)	And such other punishment as judge deems appropriate.
Hawaii (Hawaii Revised Statutes)	$0-$1,000 §291-7	X	0-1 yr. § 291-7	0-1 yr. §286-126	

Symbols: NLT — not less than
X — and/or both
+ — and
* — discretionary

STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Idaho (Idaho Code)	$0-$300 § 49-1102 (d)	+	10 da.-6 mo. (10 da. mandatory) § 49-1102 (d)	90 da. (Mandatory) § 49-1102 (d)	
Illinois (Illinois Annotated Statutes)	* 38 § 1005-3 (d)		0-1 yr. 38 § 1005-8-3 (1)	1 yr. (Mandatory) § 6-205 (2) § 6-208	
Indiana (Indiana Statutes Annotated)	$25-$500 § 47-2001 (b) (2)	X	5 da.-6 mo. § 47-2001 (b) (2)	NLT 2 mo.-1 yr. § 47-2001 (b) (2)	
Iowa (Iowa Code Annotated)	$300-$1,000 § 321.281	X	0-1 yr. § 321.281	NLT 120 da. § 321.281	
Kansas (Kansas Statutes Annotated)	$100-$500 § 8-530 (c)	X	0-1 yr. § 8-530 (c)	0-1 yr. * § 8-530 (c)	0-1 yr. if suspended; if revoked, 1 yr. minimum, and court must be satisfied that it will be sage to grant the privilege of driving.
Kentucky (Kentucky Revised Statutes)	$100-$500 § 189.990 (10)			6 mo. (Mandatory) § 186.560 (b)	

Symbols: NLT — not less than
X — and/or both
+ — and
* — discretionary

STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Louisiana (Louisiana Statutes Annotated)	$125-$400 14 § 98	X	30 da.-6 mo. 14 § 98	60 da. (Mandatory) 32 § 414	Judge may impose conditions on driving for up to 90 days.
Maine (Maine Revised Statutes Annotated)	$0-$200 29 § 1312	X	0-90 da. 29 § 1312	4 mo. (Mandatory) 29 § 1312	After 6 months, offender may petition for a license which may be granted after a determination that the public safety will not be endangered.
Maryland (Annotated Code of Maryland)	$0-$500 Art. 66½ § 17-101	X	0-2 mo. Art. 66½ § 17-101	3 mo.-1 yr. Art. 66½ § 6-205 (2), § 6-208	Also revoked under point system (§6-402, 6-405)
Massachusetts (Massachusetts General Laws Annotated)	$35-$1,000 90 § 24 (b)	X	2 wks.-2 yrs. 90 § 24 (b)	1 yr. (Mandatory) 90 § 24 (b)	
Michigan (Michigan Compiled Laws Annotated)	$0-$100 § 257.6256	X	0-90 da. §257.6256	NLT 90 da.-2 yr. § 257.319	
Minnesota (Minnesota Statutes Annotated)	$10-$100 §169.121	or	10 da.-90 da. §169.121	NLT 30 da. §169.121	

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STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Mississippi (Mississippi Code Annotated)	$100-$1,000 §8175-03	X	0-6 mo. §8175-03		
Missouri (Annotated Missouri Statutes)	$0-$100 §564.460	X	0-1 yr. (city jail) §564.460	1 yr. (Mandatory) §302.302 §302.190	
Montana (Revised Codes of Montana)	$100-$500* §32-2142 (d)	X	0-6 mo. §32-2142 (d)	30 da. §31-149 (b)	
Nebraska (Revised Statutes of Nebraska)	$100 §39-727	X	0-3 mo. §39-729	6 mo. (Mandatory) §60-424 §39-727	
Nevada (Nevada Revised Statutes)	$0-$500 §193.150	X	0-6 mo. §193.150	30 da.-1 yr. §484.379 (3)	
New Hampshire (New Hampshire Revised Statutes Annotated)	$100-$500 §262-A-62	+	2 da.-6 mo. §262-A-62	NLT 60 da.-2 yrs. §262-A-62	

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STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
New Jersey (New Jersey Statutes Annotated)	$200-$400 § 39:4-50	X	30 da.-3 mo. §39:4-50	2 yrs. (Mandatory) §39:4-50	
New Mexico (New Mexico Statutes)	$100-$200 §64-22-2	X	30 da.-90 da. §64-22-2	1 yr. (Mandatory) §64-13-59 (2) §64-13-37	
New York (Consolidated Laws of New York Annotated)	$0-$500 V & T § 1192	X	0-1 yr. V & T §1192	60 da. (Mandatory) V & T §510	V & T = Vehicle and Traffic code.
North Carolina (General Statutes of North Carolina)	$100-$500 §20-179 (1)	X	30 da.-6 mo. § 20-179 (1)	1 yr. (Mandatory) §20-17 (2) §20-19 (c)	
North Dakota (North Dakota Century Code)	$100-$200 §39-08-01	X	0-30 da. § 39-08-01	NLT 30 da.-1 yr. §39-06-23 (2) §39-06-31 (6)	
Ohio (Ohio Revised Code Annotated)	$0-$500 § 4511.19	+	NLT 3 da.-6 mo. § 4511.19	NLT 30 da.-3 yrs. § 4507.16 (b)	

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STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Oklahoma (Oklahoma Statutes Annotated)	$0-$500 47 § 11-902 (c)	+	10 da.-1 yr. 47 § 11-902 (c)	1 yr. 47 § 6-205, 47 § 6-208	
Oregon (Oregon Revised Statutes)	$0-$1,000 § 482.992	X	0-1 yr. § 482.992	90 da. § 482.430	
Pennsylvania (Pennsylvania Statutes Annotated)	$100-$500 75 § 1037	X	0-3 yrs. 75 § 1037	1 yr. (Mandatory) 75 § 616 (1)	
Rhode Island (General Laws of Rhode Island)	$0-$500 § 31-27-2 § 31-27-13	X	0-1 yr. § 31-27-2 § 31-27-13	1 yr. (Mandatory) § 31-11-6 (2)	
South Carolina (Code of Laws of South Carolina)	$50-$100 § 46-345	or	10 da.-30 da. § 46-345	6 mo. (Mandatory) § 46-348	
South Dakota (South Dakota Compiled Laws)	$50-$100 § 32-23-2	X	10 da.-90 da. § 32-23-2	6 mo. (Mandatory) § 32-12-48 § 32-12-52	

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STATE-BY-STATE STATUTORY DATA

State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
Tennessee (Tennessee Code Annotated)	$10-$500 § 59-1035	+	NLT 30 da. § 59-1035	0-1 yr. § 59-713 (d) § 59-1035	
Texas (Texas Statutes Annotated)	$100-$1,000 Penal Code Art. 802 a-1	X	10 da.-2 yrs. Penal Code Art. 802 a-1	1 yr. (Mandatory) Civil Statutes Art. 6687b, § 24 (2)	
Utah (Utah Code Annotated)	$100-$299 §41-6-44 (d)	X	30 da.-6 mo. §41-6-44 (d)	1 yr. (Mandatory) §41-6-44 (c) §41-2-18 §41-2-21	If bodily injury caused, 0-1 year and $0-$1,000. (41-6-44 (d))
Vermont (Vermont Statutes Annotated)	$0-$500 23 § 1201	X	0-2 yrs. 23 § 1201	1 yr. (Mandatory) 23 § 1206	If death or injury results, $0-$2,000 and/or 0-5 years.
Virginia (Virginia Code Annotated)	$200-$1,000 §18.1-58	X	1-6 mo. §18.1-59	6 mo.-1 yr. §18.1-59	
Washington (Revised Code of Washington	$50-$500 §46.61-515	+	5 da.-1 yr. §46.61.5546	NLT 30 da.-1 yr. §46.61.515 §46.20.311	

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State (Source)	Fine (1st Offense)		Imprisonment (1st Offense)	Period of License Revocation/Suspension (1st Offense)	Comments
West Virginia (West Virginia Code)	$50-$100 § 17c-5-2 (c)	+	NLT 24 hrs. — 6 mos. § 17c-5-2 (c)	6 mo. (Mandatory) § 17c-5-2 (c)	
Wisconsin (Wisconsin Statutes Annotated)	$0-$200 § 346.65 (2)			90 da.-6 mo. § 343.30 (1q)	
Wyoming (Wyoming Statutes)	$0-$100 § 31-129 (c)	X	0-30 da. § 31-129 (c)	30 da. (Mandatory) § 31-129 (c) § 31-279 (2) (b)	