ON THE FUTURE OF DRIVER LICENSING

AND DRIVER LICENSING RESEARCH

Leon G. Goldstein
Chevy Chase, Maryland

For many years, to become licensed, drivers in most states have been required to demonstrate knowledge of the rules and laws of the road and the ability to read signs and traffic signals and to operate the motor vehicle for which a license is sought. A written test of knowledge and a road test of performance are generally used. These requirements and procedures are based on the common-sense rationale that this ensures a kind of preparation for the tasks of driving and that it protects both the individual driver and other users of the roadway.

Licensing as related to driving performance has been evaluated scientifically by determining the correlation coefficient between performance on the tests and subsequent accidents or violations. Accidents and violations are not highly predictable, by tests or any other means. Individual accident involvement is not a highly stable phenomenon from one period to another; correlations between accidents on record for one period of, say, 3 years to another range from 0.10 to 0.20. For violations, the correlations are somewhat higher: 0.30 to 0.50. And the correlations between violations and accidents in the same 3-year period are in the range of 0.20 to 0.30.

The contribution that current licensing programs make to safe motor vehicle operation is unknown. That the tests usually consist of a 20-item multiple-choice test (sometimes just true-false) and a 10-minute road test, which requires the applicant to drive around the block and to park the car, casts doubt on whether the system makes much of a contribution. In previous years, before the advent of driver education in the public schools, it could have been said that having to take a test and having to demonstrate the ability to operate a car required the applicant to do some prior learning, to have someone teach him or her. It is dubious whether the perfunctory examinations make a real contribution, particularly with people who have gone through a formal course of education or training. Moreover, it might be argued that the system works in reverse; that is, after a brief cursory examination, the new driver is given a certificate that, in effect, identifies him as a qualified driver, fit to drive anywhere, anytime. I suspect that this gives the newly licensed driver a confidence in his or her ability that is quite unwarranted.

I propose that the licensing function be a much more thorough and comprehensive examination of each applicant, with a view to preparing him or her more thoroughly for the driving task than is currently required. For this purpose, it would be necessary to develop diagnostic

tests to identify shortcomings in knowledge, skills, attitudes, and other personal or physical characteristics. The licensing function would not only identify such short-comings but also help the individual to overcome them, either by counseling or by specifying additional training, medical attention, or other kind of treatment needed. For such a diagnostic purpose, we need tests that are based on a rationale somewhat different from that of the employee selection situation, used so widely in the military and in industry, which is based on the correlation between performance on the tests and a measure of on-the-job performance.

For the selection situation, I think this procedure is essentially correct. For the function I am discussing, namely, diagnosis and remediation, I think it is demonstrably not optimal. It turns out that drivers become involved in accidents for a wide variety of reasons. No single characteristic or small number of characteristics account for more than a small fraction of the total accidents. (Alcohol is implicated in roughly half of fatal accidents, not all accidents.) Correlation may actually obscure or mask information that is vitally needed for the purpose of diagnosis and remediation. I submit that what is needed is a comparison of the mean accident rates for a group with a given characteristic and a control group where other relevant variables are appropriately controlled or accounted for.

The classic example of how correlation may obscure meaningful information comes from studies on cigarette smoking and lung cancer. In 14 studies, the correlation between smoking and lung cancer ranged from 0.001 to 0.009, but the incidence of lung cancer among smokers ranged from 1.2 to 39 times as high as among nonsmokers. If one considers only the (zero) correlation, one would conclude that there is no connection between cancer and smoking. The relative incidence tells a very different story. We have a similar situation in accident generation. The correlation between a variable and accidents may be zero or so small that it is not statistically significant unless very large samples are used; yet drivers on the extreme of the variable may have a considerably elevated accident rate compared with those who are at the middle. The reason is that many things cause accidents, and no one characteristic accounts for more than a small part of the total. For instance, visual acuity has only about a 0.08 correlation with accidents in a given period. Yet drivers with poor visual acuity may have a much higher accident rate than those with good or average vision. The point is that there are only few drivers who have very poor visual acuity. Those few who are found at the licensing examination to have poor vision usually are so informed. Similarly, applicants with other detectable, but yet to be determined, characteristics that are shown to be associated in a causal way with an elevated accident rate may need help.

The program I am suggesting would require a large research effort that would be more expensive and difficult than the correlation approach. We need large numbers of cases of drivers with a large variety of characteristics. For each characteristic to be studied we need a sizable pair of groups, one with the characteristic and the other without, on whom we also have accident data and control data.

The research would need to be done before the implementation of such a program to justify its cost. The same rationale is applicable to driver reexamination, improvement, and education programs. It would be expected that, at different ages, at different stages of driving experience, and with different sexes, many of the critical characteristics will be different. And only thorough research can identify the differences.

There are at least four points at which such a diagnostic-remedial approach appears to have particular promise:

1. Original licensing of young drivers whose accident rate could be reduced to that of 30-year-olds in 2 years of driving instead of 10;
2. Reexamination of drivers older than about 65, whose per-mile rate is about as high as for those below 25, but for different reasons;
3. Drivers of all ages who give evidence of trouble because they get into the point systems; and
4. Original preparation of drivers.

Not all students have the same needs, the same problems, or the same know-how and

abilities. Analysis of individual students' needs seems as important as analysis of the driving task. Certainly the sexes differ in their abilities, knowledge, and needs. But again, only competent (and expensive) research can determine these issues and develop effective means to deal with them.

Discussion

Frederick E. Vanosdall, Michigan State University

Goldstein's proposal for a more thorough and comprehensive examination of each applicant points to the need for the licensing process to motivate applicants to learn and overcome the areas in which they are deficient. In his rationale supporting improvements in driver licensing, Goldstein emphasized that (a) current procedures are based on common sense; (b) the value of licensing in achieving safe motor vehicle operation is unknown; (c) short-cut examinations requiring limited knowledge and skills are not reliable; and (d) issuance of a license might actually give a new driver erroneous confidence in his abilities, which may lead him to trouble.

Although these statements might be considered by some as an "indictment" against current licensing tests, they are true. Only in a few states have driver licensing authorities and interested researchers viewed licensing programs with scientific objectivity and initiated studies to guide development of methods for improving licensing examinations. (However, some existing tests, such as the road test, have been developed by using the methods proved useful in extensive experience gained through observation of drivers in the test environment—the real world.)

To improve licensing programs, Goldstein advocates developing diagnostic tests to identify limitations of applicants' "knowledge, skills, attitude, or other personal or physical characteristics," which then are pointed out to the individuals as a remedial process—to subsequently encourage more proficient performance.

The problem of motivating drivers to drive as well as they know how remains. Thus, Goldstein's auxiliary approach—to utilize diagnostic testing to determine what characteristics account for accident involvement—is a means of studying methods for controlling the variables in such a way to provide for remedial treatment. Such an approach will surely require long-term research and a reevaluation of the traditional criteria of accidents and violations as the basis for evaluating driver performance. Is not an intermediate criterion of driver performance relative to actual and potentially hazardous traffic situations a major need?

As indicated by several other authors, it seems that successful development of plans to conduct research beneficial to drivers, licensing agencies, and the public will require interested driver licensing authorities and researchers who jointly undertake projects on a long-term basis. In addition they should recognize that success cannot be achieved without legislative and public acceptance.

Goldstein's proposed effort has a practical appeal, but demands "freer thinking" than has been evident in the driver research being undertaken. It requires that a highly reliable and valid intermediate criterion for measuring real-world drivers' performance be found or established before diagnostic testing is initiated.