

Driver Education and Regulation

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Attempts to see into the distant future have rarely been accurate, and predictions about the future of transportation are no exception. As the first half of the 20th century closed, the World of Tomorrow was to give us automated cars speeding us safely along elevated highways to destinations around the country, around town, or around the block. This view of what we now label the Intelligent Transportation System is still on the drawing board. The path of progress has turned out to be a country road full of twists and turns, with our vision of the future extending about as far as the next bend. With this in mind, the Committee on Operator Education and Regulation determined to peer into the next millennium only as far as the first one or two decades.

However, within the realm of driver education and regulation, the many influences capable of molding the future will, for discussion, be divided into three categories: demographics, economics, and technology. The experience base upon which predictions are drawn comes largely from the developed nations of the world. In addition to being the experience with which the committee is most familiar, it is the experience most predictive of the future. The rest of the world is likely to follow the same path, only more quickly.

DEMOGRAPHICS

Two demographic characteristics of the driving population are the basis of change at the present time and are likely to be so for the next decade: advanced age and disability. The pattern in the two cases has been similar. Both characteristics are associated with somewhat elevated crash rates, and both have been the basis of regulatory restrictions on driving. With increased emphasis on safety, the imposition of restrictions picked up momentum in the United States in the last half of the 20th century, leading to enactment of the Highway Safety Act of 1966. As the interests of safety began to conflict with those of personal mobility, some better balance of relative benefits and costs associated with each was sought, led to a great extent by advocates of the restricted groups.

Advanced Age

The relation of age to driving safety is well established. Young drivers have per-driver crash rates greatly exceeding those of the adult population, starting with a factor of 10 at age 16 and gradually leveling off at about age 25. Beyond age 65 the rate creeps up again, doubling in the 70- to 74-year age group and tripling beyond age 75. The hazards of youth have long been recognized and addressed through education and licensing. More recently attention has focused increasingly on the other end of the age distribution. The well-advertised baby

boom following World War II produced a bubble in the population age distribution consisting of a cohort that is now approaching its advanced years. The risk presented by elderly drivers has, until recently, been addressed primarily through imposition of restrictions. Some jurisdictions have mandated routine retesting at a specified age. In almost all areas, drivers giving evidence of disability through accidents or observed instances of unsafe driving have been reported to licensing agencies by police, relatives, or others and have been called in for retesting. Those drivers giving evidence of deficiencies have had their licenses revoked or have been restricted to driving at times or under conditions in which their deficiencies create minimal risk.

Some efforts have been made to overcome the risks of declining ability through educational programs, such as the 55-Alive program of the American Association of Retired Persons (AARP). Several U.S. jurisdictions require automobile insurance companies to give discounts to elderly drivers who complete such programs. However, the impact of these programs on age-related deficiencies is likely to be small since they involve less than 2 percent of the eligible population in any year and draw primarily from the “young-old” age group, which represents little risk. Unfortunately, age-related declines that affect the true elderly tend to be irreversible and not easily remedied through instruction.

More recently, attention has shifted away from restricting the driving of the elderly toward facilitating their mobility through other means. Paratransit systems designed specifically for senior citizens have increased both in number and in the type of services provided. Research on mobility, which accounted for but one technical paper in TRB *Special Report 218: Transportation in an Aging Society*, made up half of the papers on transportation for the elderly published in the decade following that report. Meanwhile, age-based license testing has been declining, and several licensing agencies have instituted education and counseling programs for the elderly to help them in using other modes of transportation. The shift away from restrictions toward more assistance can be attributed in part to the increased numbers and influence of elderly citizens and in part to the advocacy role played by AARP and other organizations representing the elderly. In addition, greater attention has been given to the matter of mobility by assistance organizations, such area agencies on aging, and the rehabilitation hospitals that treat the elderly. This trend is likely to be extended and expanded over the next decade. What has been largely scheduled transportation to limited locations such as senior centers is likely to be supplemented or replaced by more convenient on-demand service to almost any location. The role of regulatory agencies and educational services will be increasingly that of facilitators who encourage and assist in the voluntary transfer from driving to riding.

Disability

Over the past two decades there has been a steady growth in educational programs to assist drivers with various afflictions in adapting their driving to their limitations as well as in becoming acquainted with the resources available to assist them. To a great extent, the growth has been facilitated by the increased availability of specially designed vehicles and control systems. However, the significantly greatest impetus for change has come from legislation, such as the Americans with Disabilities Act (ADA) in the United States, which forced public and private organizations to justify any policies or practices that limited

driving by those with disabilities. Licensing regulations of many jurisdictions have been liberalized to allow drivers with severe visual deficiencies to drive under limited conditions, at least until their driving records establish them as risks. U.S. federal regulations governing drivers of interstate vehicles have been amended to permit driving by categories of drivers whose disabilities prevented them from doing so in the past.

The initial results of the changes described appear to be salutary, with the afflicted population often showing lower accident rates than those of the able bodied. It seems likely that this trend will continue, and research will be devoted to isolating those aspects of disability that do and do not adversely affect safety of operation.

ECONOMICS

Many of the advances in the education and regulation of drivers fueled by the good economic times that prevailed into the 1980s have fallen victim to a downturn in the world economy. The result has been the curtailing of many educational and regulatory services previously supplied at public expense in many areas. Efforts have been made to ensure continuation of many services, or at least fulfillment of the objectives they were to achieve, through privatization, consolidation, or certification. How far these efforts will continue will depend on the economy, which is notably hard to predict, and on the success of the steps taken, which can at least be measured.

Privatization

Probably the most visible product of privatization is services to drivers. Within the United States, the chief target of privatization has been driver education. Publicly funded programs, which reached more than 80 percent of high school students a little over a decade ago, reach less than one-third today, and the percentage is declining. Where public funding has been withdrawn, instruction continues through private vendors or through schools on a fee basis. With privatization likely to continue in the United States for the foreseeable future, ensuring the satisfaction of safety standards by private driver education providers will heighten the need for a quality control process during the next decade, particularly where a profit motive could lead to cost cutting. In courses for traffic violators, typically privatized, quality has varied greatly with the organizations conducting them. Yet, in other countries, where driving instruction has been largely privatized from the beginning, experience seems to show that expense has not been a barrier to the success of quality courses.

In addition to education, various licensing functions, including testing, have also been increasingly privatized in the United States. For some time, schools in certain jurisdictions have been permitted to test their own students. More recently, various aspects of the driver licensing process itself have been operated by private vendors, much like the issuance of hunting and fishing licenses. Here again, the effectiveness of licensing in ensuring the basic abilities needed for safe driving will depend upon the measures taken to control quality.

Consolidation

In many areas there has been a consolidation of educational and regulatory functions across jurisdictions. Recent examples of such consolidation across North America include the Coalition for Road and Traffic Safety, which convened driver education specialists from the

public and private sectors to generate a curriculum and conduct classes to certify instructors, and the American Association of Motor Vehicle Administrators, which has prepared a model driver manual, written test, and road test. Some consolidation has also occurred within industry as automobile, insurance, and video production companies have combined resources to produce instructional materials.

The economic benefits of consolidation include the sharing of design and production expenses to produce better quality at lower cost. Although individual users may continue to define their own unique requirements, their cooperation through national and international organizations, stimulated by economic pressures, may lead to greater uniformity, further improving quality and reducing cost. If initial attempts at consolidation prove successful, fulfilling the needs of individual contributors without stifling competition, such alliances may be expected to expand to other aspects of education and regulation, such as simulation and advanced skills training, the costs of which have thus far discouraged development.

Certification

A means by which public agencies can ensure that the objectives of education and regulation are met without incurring the costs of meeting them is the process that, for lack of a better term, can be called “certification”—that is, setting standards and certifying their fulfillment. One example of this process in education is competency-based training (CBT), under which individuals can be instructed in any manner that they and the instructors decide upon and then certified as competent on the basis of their ability to meet specified standards. Besides the economic benefit to the general public of having people learn at their own expense, there is an overall economic gain from the allocation of resources where they are most needed. Despite some early research demonstrating the benefits of CBT, it has received little acceptance thus far by public agencies, which still tend to define requirements in terms of hours rather than standards of competence.

The link between privatization and CBT is clear, and as more jurisdictions move toward the former, the latter may begin to play a key role in ensuring quality. Some experimentation with CBT is currently under way within the already privatized system of novice training used by some states in Australia. As privatization expands in the near future, the practice of defining educational requirements in terms of products rather than processes may be expected to expand.

TECHNOLOGY

In the public mind, reference to the next millennium means improved technology, despite the fact that the term “Y2K” is associated with fear of technological shortcoming. Although technology is a long way from delivering the automated and rapid system of transportation envisioned years ago, great strides have been made in the two-way flow of information that makes up effective instruction and assessment.

Electronic Delivery of Information

At the arrival of the new millennium, the two principal developments in information delivery involve the electronic flow of information through personal computers (PCs), over wires via the Internet, and through disks such as the CD-ROM and its successor, the digital versatile

disk (DVD). As of 1998, almost half of U.S. households had access to PCs and about half of those had Internet access. Both fractions are increasing at a sizable rate. Since the mid-1990s, most PCs were sold with CD-ROM drives, which will soon be replaced by DVD. Most schools now provide students with PC access to both the Internet and CD-ROMs.

The widespread availability of PCs has paved the way for instructional programs offering the potential for improving the scope and effectiveness of driver education. First, electronic instruction can be easily accessed by individuals in their homes, at their convenience, and at their own pace. Second, it allows much more interaction between sources and recipients of information than typically occurs in the classroom. Third, it permits transmission of highly dynamic visual information beyond that delivered through instructors or texts. At the present time, dial-up access to the Internet cannot accommodate the high data transmission rates needed to transfer lengthy high-resolution motion video in an interactive format. However, present T1 and digital subscriber line (DSL) connections can meet the need for schools and other institutions, and cable access to the Internet will soon do so for individual households.

Simulation

The type of simulation employed in driver education for much of the last half of the 20th century amounted to a film projecting situations to which students could respond by indicating a selected response, which was scored for appropriateness. It permitted a classroom full of students to face and learn from situations that it might take years to encounter in the car and to make their mistakes where the penalties were limited to low scores. However, this was “open loop” simulation in that, although drivers responded to the scenes, the scenes did not respond to the drivers as would happen in a car. One could not learn to control the motion of a car through simulation. Advances in computer technology over the past decade have closed the loop, providing simulation of scenes with which drivers interact on a continuous basis.

Until very recently, the effectiveness of computer simulation in developing driving skills has been limited by (a) the inability of programs to create driving scenes of the complexity needed to develop the perceptual skills critical to driving safety, (b) the inability of most home PCs to process data fast enough to handle complex scenes without lags, and (c) costs that were out of the reach of most individual users. These obstacles are rapidly being overcome, and it is likely that before the next decade is out, beginners will have access to simulation that will enable them to acquire fundamental perceptual, cognitive, and psychomotor skills before they even get into the car.

Impact of Technology

The technological advances described will not, of course, replace the systems under which drivers have historically been educated and regulated. The electronic flow of information provided by DVD, Internet, and simulation programs will permit instruction and assessment to reach more people, with quicker, more economical, and more up-to-date and individualized services than has been possible. Yet technology can only do what it has been designed to do; it can enable drivers to handle the situations its creators have anticipated. It

is up to people—teachers and examiners—to help students pick up where technology leaves off. The task will be to alter the existing institutions in a way that will allow the benefits of technology to be fully exploited and not compromised by tradition. It will mean allowing instructional needs to be specified in terms of competency rather than hours in the classroom and car or allowing licenses to be issued on the basis of accurately measured performance rather than an examiner's opinion. Achieving this change is likely to be as challenging as developing the technology that permits it.

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