

Table 3. Restraint program results of attitude measures—mean scores.

Program	Pre-program	Post-program	Preprogram/ Postprogram Difference	Follow-Up	Preprogram/ Follow-Up Difference
Information	12.2	16.5	+4.3 ^a	—	—
Testimonial	13.1	16.7	+3.6 ^a	—	—
Vehicle	11.9	15.3	+3.4 ^a	15.2	+3.3 ^a
Convincer	12.4	14.1	+1.7 ^a	14.5	+2.1 ^a

^ap < 0.05.

information, testimonial, and vehicle programs produced significant gains in knowledge about, attitudes toward, and use of restraints. How long these gains were sustained could be determined only for the vehicle program. However, the fact that gains realized through this program appeared to endure is encouraging.

The vehicle program appeared to produce the most substantial gains in restraint use. However, it would be dangerous to make comparisons. The fact that the program use rate was highest among students who received the vehicle program may be an indication that they were a more responsive group than those who received the other programs.

The effectiveness of the convincer program is difficult to evaluate. The failure to obtain any significant gains in use is certainly discouraging. However, this failure is accounted for at least in part by (a) failure of the information component of

the program to communicate effectively and (b) large day-to-day variation in prevailing restraint use.

From the results obtained, the following conclusions may be offered:

1. It is possible to influence the use of safety restraints among teenage drivers by means of an in-school program;
2. Communication of factual information about restraints and the risks associated with failure to use them are necessary elements of any program; and
3. More research is needed to determine whether any additional benefit is derived from experiencing the consequences of nonuse through operation of a vehicle, a ride in a convincer, or the testimony of someone who has been injured in a crash.

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Contributory Negligence in Promotion of Safety Belt Use

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Contributory negligence, or contributory fault, can be described as unreasonable behavior on the part of an individual by which he or she contributes to injuries caused him or her by another's negligent act. Historically, under common law, once contributory negligence on the part of a plaintiff is established by a defendant in a personal-injury action, this serves as a complete bar to the plaintiff's claim. Even in jurisdictions without seat belt legislation, the common law over the past two decades has been increasingly recognizing that the failure to wear seat belts constitutes contributory negligence. It appears that if the common law continues to develop by itself, the seat belt defense will be increasingly recognized by the courts in the assessment of contributory negligence. If the seat belt defense is to be recognized by law, such statutes should be broad rather than restrictive to provide just penalties for contributory negligence.

Many studies in laboratories, as well as on-site motor vehicle crash investigations, have shown that modification of collision forces to prevent human injuries requires occupant restraint. Canada, the United States, the United Kingdom, and many Western world countries have mandated the availability of three-point restraint systems during the past 10-15 years. The effectiveness of seat belts is clearly established from the many studies on the subject. The disadvantages of wearing seat belts appear to be negligible.

Data were recently collected on seat belt legislation and its effectiveness in many countries of the Western world (1). A summary of the major findings is cited below:

1. Countries that have enacted seat belt laws

seem to have evolved to a state where mandatory seat belt legislation was considered acceptable by the majority of the public prior to actual enactment. Where this is not the case, the law has either been repealed, has no penalty associated with it, or is not rigorously enforced by the police.

2. Seat belt laws enacted by various countries usually pertain to the driver and front-seat passenger only. Also, the laws are generally applicable to passenger cars and vans.

3. Most countries with seat belt laws have penalties associated with the legislation. In some cases the amount of the fine has a substantive upper limit (\$200-\$300). However, where statistics are available, it has been shown that the average fine is usually less than \$10. Some countries have penalties for noncompliance that include imprisonment.

4. All countries allow exemptions from seat belt legislation. Exemption generally applies to passengers of a particular age or size, passengers with certain medical conditions, and drivers of commercial vehicles.

5. All countries studied have regulations regarding the installation of seat belts in both new and old cars. Most countries specify that the three-point inertial-retractor-type belt be installed.

6. Public information and education programs have been used to some extent by all countries that have enacted seat belt legislation. However, it was found that while these programs may be of value in

changing the attitude of motorists concerning the safety and effectiveness of seat belts, they do not result in any appreciable behavioral change regarding the wearing of seat belts.

7. Most countries that have enacted seat belt legislation expended considerable effort to publicize the law prior to its enactment. After the law became effective, some countries provided a grace period of at least one month before they began to enforce it.

8. Studies in virtually all countries revealed that the seat belt use rate rises from 200 to 300 percent immediately after the seat belt law becomes effective. The rate subsequently drops as much as 10-20 percentage points and then rises to some plateau, depending on the amount of attention and enforcement provided by government officials.

9. The results of attitudinal studies in countries with seat belt laws reveal that 60-80 percent of the people interviewed prior to enactment of the law indicated that they were in favor of mandatory seat belt use. However, the use rate was so much lower that it bore no relation to the results of the attitudinal studies.

10. Police officials are reluctant to enforce laws that are not supported by the general public; therefore, in those countries where the law is unpopular, enforcement is very low.

11. In almost all countries it was found that the seat belt law was not enforced independently of other traffic infractions. It is almost always enforced only as an ancillary action in connection with some other traffic violation.

12. Enforcement of seat belt laws appears to be essential to a high seat belt use rate. In several countries it was determined that the use rate was directly related to the level of enforcement, with high use rates usually associated with stringent enforcement. However, in some cases it did appear that the people's cultural propensities for being highly law-abiding obviated the need for stringent enforcement.

13. In several countries with seat belt laws it was found that the courts have ruled that insurance compensation should be reduced for victims who were not wearing seat belts at the time of the collision. In order to support such a ruling, it is necessary to have the crash investigated by experts, who must then testify that the injuries sustained would have been less if the victim had been wearing a seat belt. The amount of reduced compensation has been set as high as 50 percent in several European countries.

Whether a given jurisdiction has chosen to follow the Australian example and mandate the use of the available restraint system (as has happened in much of Canada in the past few years) or to continue a policy of voluntary use (as in the United States), the increasing application of personal-injury tort law will undoubtedly influence future legislation. The premise of contributory negligence can be stated that where a situation or activity involves a foreseeable risk of accident, there is a common law duty to exercise reasonable care to guard against it. If failure to exercise reasonable care to avoid a foreseeable risk of an accident is the proximate cause of injury to another, legal liability follows unless contributory negligence on the part of the injured party was also a proximate cause. Therefore, contributory negligence or contributory fault can be described as unreasonable behavior on the part of an individual by which he or she contributes to injuries caused him or her by another's negligent act.

LEGAL EVOLUTION OF APPORTIONMENT

Historically, under common law, once contributory negligence on the part of a plaintiff is established by a defendant in a personal-injury action, this serves as a complete bar to the plaintiff's claim. In fact, this remains the law today in a number of American states. Perhaps this explains the reluctance that American courts have demonstrated to find failure to wear seat belts as contributory negligence, as this would permit negligent defendants to escape liability in total. This harsh judicial rule was subsequently altered by means of so-called apportionment legislation. Ontario enacted the first Canadian statute in 1924 and the other provinces followed over the next few years. Ultimately, this legislation spread to the United Kingdom and Australia and has, over the last few years, been appearing in the United States.

The Ontario Negligence Act (R.S.O. C296 S.4, 1970) provision is as follows:

In any action for damages which is founded upon the fault of negligence of the defendant, if fault or negligence is found on the part of the plaintiff that contributed to the damages, the court shall apportion the damages in proportion to the degree of fault or negligence found against the parties respectively.

Under the statute, in a personal-injury action the finder of fact attempts to determine the extent to which the plaintiff's conduct contributed to his or her damages caused through the negligent conduct of the defendant.

Turning now to seat belts, the common law standard of the reasonable man in the role of a driver or passenger in a motor vehicle must be established. Until the 1950s, when seat belts were generally not available, any argument that failure to wear seat belts constituted contributory negligence would have been moot. As seat belts became generally available, first as an option and ultimately as a requirement incumbent on manufacturers, and as evidence came to light of a significant indication that the use of seat belts constitutes a major factor in saving lives and in preventing serious injuries in motor vehicle collisions, the notion of what was reasonable behavior changed. The courts have taken a similar view in imposing contributory negligence where workmen fail to wear safety goggles and safety ropes. The inconvenience of using the available seat belt is slight, and so the reasonable person would use it in the face of an unreasonable risk, even if it offered only a small amount of protection.

In one of the leading Canadian decisions that deals with the seat belt defense, Mr. Justice Munroe of the British Columbia Supreme Court reduced an award by 25 percent because of a plaintiff's negligence in failing to wear a seat belt. In stating what is now, in our view, the legal position in Canada, Mr. Justice Munroe said, "A person must use reasonable care and take proper precautions for his own safety, and such precautions include the use of an available seat belt" [Yaun v. Farstad, 66 D.L.R. (2d) 295 (B.C.) 302, 1967].

CONCEPT OF RISK

A year after the British Columbia Supreme Court decision, Mr. Justice Dubinsky of the Nova Scotia Supreme Court [McDonnell v. Kaiser, 68 D.L.R. (2d) 104 (N.S.), 1968] did not invoke the seat belt defense to mitigate damages because he expressed doubts about the general effectiveness of seat belts and

concluded that "the effectiveness of seat belts is still in the realm of speculation and controversy." This attitude to disallow the seat belt defense was raised again in 1974 [Reineke v. Weisburger, 46 D.R.L. (3d) 239 (S.Q.B.), 1974], which cited a number of negative and uninformed arguments, such as no need to wear the belt within city limits and suggesting that even had the plaintiff worn her seat belt, she may have been seriously injured by another occupant tossing about the car. Mr. Justice Sirois rejected the established logic of Yuan v. Fairstad because no Canadian authorities had been quoted in that judgment. Mr. Justice Sirois further resurrected the following emotional suggestion: "A person driving down the highway on his proper side of the road is entitled to assume that other persons using the highway will obey the laws of the road still appeals to me and it is not negligence not to strap oneself in the seat like a dummy, a robot or an astronaut." These emotional arguments and others have arisen from a 1967 Hastings Law Journal article (2), which has been categorized as undistinguished and incomplete by Mr. Justice Allen Linden (3). Any doubt that Mr. Justice Dubinsky and others might have had over a decade ago surely can no longer exist in view of recent overwhelming evidence as to the effectiveness of belts.

In a 1974 Ontario Supreme Court decision [Smith v. Blackburn, R.T.R. 533; 2 Lloyd's Rep 229 (Q.B.D.) 1974], where the seat belt defense was not recognized, there was the suggestion that it was necessary for the individual plaintiff to actually foresee the exact risk that arose. In most judgments in the past decade in Canada, the court has found it only necessary that the general risk be foreseeable by a reasonable person (Drage v. Smith, R.T.R. 1 at 5F, 1975).

In regard to risk, 1 out of every 10 cars in Ontario is involved in a crash each year (according to a pamphlet by the Insurance Bureau of Canada, You and Your Car Insurance). One-half of the population of Ontario will be injured in a motor vehicle collision at some time during their lifetime (Ontario Legislative Debates, Dec. 2, 1975, p. 1185). This considerable risk is similar throughout Canada and the United States. Although earlier cases seem to have been decided against defendants because of a failure to prove the effectiveness of seat belts or the degree of risk involved, the currently available body of evidence permits the expert witness to statistically establish the concept of considerable risk and to readily establish the effectiveness of seat belts in preventing death and severe injury.

ROLE OF EXPERT WITNESS

Bearing in mind the above considerations, failure to wear a seat belt per se does not entitle a defendant to employ the seat belt defense as contributory negligence. The onus rests with the defendant to establish that, had the available seat belt been used, the injuries sustained either would have been avoided entirely or would have been of less severity. Thus, the causal connection between failure to use the belts and the resulting injury must be established. Many cases have turned on findings of fact as to whether failure to employ belts contributed to the plaintiff's injuries. Courts have placed much reliance on the use of expert evidence. Indeed, in some jurisdictions, medical and engineering experts are developing in this field. The challenging job for the expert witness, usually a physician with a special interest and expertise in motor vehicle trauma, is to prove causation in order to establish contributory negligence. His or her testimony is sometimes augmented by that of an engineering expert.

One of Canada's recognized leading experts, Carl Shiels, Research Engineer from the University of Saskatchewan, has been most helpful as an expert to the courts in many cases. However, the medical aspects of expert testimony may require confirmation by a licensed physician and expert, as pointed out by Mr. Justice McPherson in his judgment in the case of Ohlheiser v. Cummings [1978, Sask Q.B. (not yet reported, case study available from authors)], where he asked if he should accept Mr. Shiels as qualified to say how much force would break the plaintiff's leg. "Without disrespect to him, therefore, I cannot accept Mr. Shiels' opinion that Mrs. Ohlheiser's leg might not have been broken if she had been restrained." Despite this ruling, the court did accept Shiels' opinion that the injuries to the plaintiffs would have been less severe if they had worn their seat belts. He, therefore, found contributory negligence.

More cases have failed to establish contributory negligence on the point of causation than for any other reason. When causation is not proven, the cases are seldom appealed, as it would mean overturning a factual ruling rather than a point of law.

In some cases an expert is able to establish causation of injury for some vehicle occupants but not for others. In some cases of multiple injuries to one occupant, testimony can clearly establish causation for some injuries and be unclear in the remaining injuries. Where another passenger who was wearing a seat belt suffers no injury, the courts are often more willing to find causation. In some instances, the courts should be willing to conclude from the very nature of the injuries that they would have been prevented (Toperoff v. Mor, R.T.R. 419 at 421F, 1973).

Historically, tort law has played an important role in deterring certain types of conduct. Although some contend that tort law has no business establishing new standards of care without legislative initiative, this has always been the case. For example, tort law insisted on reasonable speed on the highway long before statutory speed limits were set. Under the umbrella of the reasonable-man test, tort law has fostered safety by taxi companies, public transit systems, and even the medical profession. The courts have also held as contributory negligence the failure to use safety devices such as a safety rope and safety goggles (3).

In Canada, most of the apportionment statutes speak of fault that causes "damage or loss", as it is not alleged that the plaintiff's negligence caused the collision but rather that it caused or contributed to his or her injury. If the courts uniformly adopted the view that once the causal connection is established between failure to wear seat belts and the injuries suffered by the plaintiff, such failure constitutes contributory negligence and thus would offset the amount against the overall reward; this could go a long way toward educating the public and encouraging them to use belts. Until now the offset through failure to use belts, even where it has been established that such failure was the major cause of the injury suffered by a plaintiff, has amounted to, at most, about 35 percent. The range appears to be between 5 and 35 percent, with the average offset being about 25 percent. In a recent case [Ulvend v. Marini, 4 C.C.L.T. 102 (B.C.S.C.), 1977], the plaintiff wore the available lap belt but failed to employ the shoulder harness. In judgment, the 25 percent contributory negligence offset was quoted as reasonable and fair where no belt was worn, and a 15 percent offset was awarded where the shoulder harness had not been used.

Although an offset as low as 1 percent has been found in seat belt contributory negligence [Plitchie

v. MacNeil, 1979, N.S.S.C. (not yet reported; case study available from authors)], a recent judgment in the British Columbia Supreme Court (Needham v. Harron Brothers, 1980, B.C.S.C. (not yet reported; case study available from authors)) decided that the failure to wear the seat belt must be treated as a small contribution and fixed this small contribution at 15 percent. Except in jurisdictions where the ancient common law traditions of contributory negligence apply (that is, where contributory negligence acts as a complete bar to a claim by the plaintiff), in jurisdictions where the seat belt defense is recognized the better approach would be to permit an offset against the overall damages found against the defendant according to the percentage causation established by the defendant from failure to wear the belts. This is certainly the spirit behind the provisions of the Ontario Negligence Act and of similar apportionment legislation elsewhere.

INFLUENCE OF MANDATORY STATUTE ON COURT DECISIONS

What role do statutes that mandate the use of seat belts play in all of this? In these instances, the courts often seize on the statutory duty as establishing the standard of care expected of the actor and, where that standard is breached and the other elements required to prove negligence are established, liability is imposed on the defendant. Indeed, breach of a statutory duty can serve as grounds for contributory negligence on the part of a plaintiff.

In the motor vehicle situation, it seems obvious that safety statutes such as traffic rules are designed for the broad purposes of preventing collisions in which plaintiffs are just as likely to be hurt as defendants. Therefore, it can be argued that violation of these statutory standards serve as evidence of negligence. Thus, the fact that an individual made a left-hand turn at an intersection where such a turn was prohibited may serve as evidence of negligence, even though without such a statutory requirement, at common law an obligation not to make that turn at that intersection did not exist.

When we consider the use of seat belts, a somewhat different situation exists. As we have said, the use of seat belts over the past few decades has been increasingly recognized as an important deterrent to prevent serious or fatal injury. Therefore, there has been growing recognition at common law that a reasonable driver or passenger in an automobile with available seat belts would use those belts. Thus, at common law, failure to use the belts would be evidence of negligence. We are reluctant to apply the term *prima facie* evidence of negligence as some courts have done because this may not appear reasonable. The issue of whether the evidence presented by the defendant on the matter as to whether the causal link between the failure to use the belts and the injury suffered was established usually remains one for the fact finder.

In *Jackson v. Miller* [25 D.L.R. (3d) 161 O.H.C., 1971], Mr. Justice Osler determined from the non-expert evidence that plaintiff Jackson had been ejected from the vehicle and concluded that this was *prima facie* evidence of contributory negligence. "I have no doubt that if Jackson had remained with the car, he would not have suffered the injuries he received." He further found that, as a matter of fact, the plaintiff's injuries resulted from coming into contact with the ground after being ejected from the car. Also, as a matter of law, he found the injuries to Jackson were contributed to by his own negligence. The mechanism of injury and the protective role of seat belts might be established adequately for some courts to find *prima facie* con-

tributory negligence but, in the great majority of recent cases, failure to establish the causal link was the result of poverty or absence of expert testimony.

UPDATING OF REASONABLE BEHAVIOR IN EYES OF THE COURT

It appears from recent court decisions that plaintiffs are not excused from using the seat belt because they hold certain views as to its effectiveness [*Gagnon v. Beaulin*, 1 W.W.R. 702 (B.C.S.C.), 1977], or because they were not advised by the driver to use the seat belt [*Beaver v. Crowe*, 49 D.L.R. (3d) 114 (N.S.S.C.), 1974], or they were unaware of the availability of the seat belt in the vehicle in which they were riding (*Jackson v. Miller*).

It seems from the recent British Columbia Supreme Court decision [*Arnie v. Adams*, 1980, B.C.S.C. (not yet reported; case study available from authors)] that, where there is a duty established to wear belts, in the absence of belts in the vehicle, there is a duty to have them installed.

In a leading motor vehicle negligence case [*Sterling Trusts Corp. v. Postma*, 48 D.L.R. (2d) (S.C.C.), 1964], the Supreme Court of Canada held that a breach of the Ontario Highway Traffic Act shifted the burden onto the defendant to disprove negligence. Although this principle has since been challenged, another motor vehicle negligence case in the Ontario Court of Appeal [*Queensway Tank Lines Ltd. v. Moise* (1969), Ont. Reports 1970, Vol. 1, 535 (O.C.A.)] heard judgment by Mr. Justice Mackay that suggested that a breach of the Highway Traffic Act is *prima facie* evidence of negligence unless the defendant can show by evidence no fault or want of care on his or her part. Applying this rule to the failure on the part of the plaintiff to use the available seat belt as mandated in the Highway Traffic Act, should the burden of justifying the nonuse of the available restraint system fall on the plaintiff? In *Oehlheiser v. Cummings*, Mr. Justice MacPherson addressed this question in his judgment as follows: "When we all pay for one another's hospital and medical care and other loss through taxes or insurance, we each have a right to say to a driver and to a passenger: 'Fasten your seat belts in my interest if not in your own. If you don't fasten them, then you may have to pay part of your loss if you are hurt.' What we have here is not a new interference with private rights but the creation of a new public duty in the automobile age."

The imposition of a statutory duty to use seat belts only confirms what has been developing at common law. That is, so-called reasonable drivers and passengers do use seat belts. With these statutes, they must use them. Although such statutes will no doubt encourage greater numbers of people to wear belts, which depends on the extent to which the seat belt statutes are enforced, the growing evidence and education of the public as to the effectiveness of belts in preventing serious injury and death and the growing adoption by the courts of the contributory negligence defense (where persons have failed to wear belts and such failure has contributed to the injuries) were having a similar effect in any event.

One could question whether the existence of a statutory duty by itself is sufficient to permit a court to find contributory negligence in circumstances where the common law might not require it. For example, consider the individual sitting in his or her car at the side of the road with the motor off who is not wearing a seat belt. The statute may require that it be worn. At common law, the reasonable person might not wear it in that situation. The car is subsequently struck by another vehicle.

The expert evidence establishes that, had the person been wearing the belt as required by the statute, the injuries would have been less severe. At common law, the reasonable person in this position may not have buckled up because he or she may not have foreseen the possibility of being involved in an automobile collision in those circumstances. If and when a case of this sort comes to court, the matter of whether the seat belt statute by itself serves as evidence of contributory negligence will then be determined.

In fact, few cases that involve failure to wear seat belts ever come to court because of the general practice that most motor vehicle collision claims are settled out of court. At the present time in Canada, where expert opinion indicates that failure to wear a seat belt contributed to the injury, lawyers are becoming sufficiently sophisticated in this area to advise their clients of the offset that courts would likely award. However, because of the significant effect that seat belts have on preventing serious injuries and death, conviction under a statute for failure to wear a seat belt could have a similar effect on a person's insurance premiums as do a number of speeding convictions.

CHILD-RESTRAINT SYSTEMS

There is also the aspect of statutory standards that govern the use of child-restraint systems. With an increasing emphasis on the rights of children and their access to independent legal representation, where parents fail to take appropriate measures to ensure that their children are adequately placed in a restraint assembly, and these children suffer injuries directly caused by such failure, an action will lie against their parents for negligence. Where a parent with a young child improperly places the child in a system or does not put the child in one at all and is involved in a collision, even though the collision may be entirely the fault of someone else, the defendant will have available the seat belt defense to the extent that the injuries suffered by the child may be directly attributed to the improper use or the failure to use the child-restraint system. That amount that is offset against the global award may be claimed by the child against his or her parent. Here the standard of the reasonable parent will likely be determined by the manufacturers' standards for the use of the child-restraint system set out in one type of legislation and by legislation that mandates the use of such a system.

We would strongly recommend the adoption of uniform seat belt legislation that standardizes the types of restraint systems required to be installed by manufacturers and also mandates their use. Such legislation should make it clear, however, that the existence of the seat belt defense does not constitute a complete bar to a plaintiff's claim, thus granting immunity to a negligent defendant. Rather, we would suggest that language similar to the Ontario Negligence Act be adopted, which indicates that the apportionment will be in direct relation to the causation demonstrated through expert evidence. In those states where contributory negligence constitutes an absolute bar to recovery, apportionment statutes should be enacted.

CONCLUSIONS

In summary, the effectiveness of seat belts in reducing or preventing injury in motor vehicle collisions has been well established. However, it has been demonstrated that, regardless of educational campaigns designed to increase the public's aware-

ness of the usefulness of seat belts, public acceptance has evolved very slowly. Where mandatory seat belt legislation is in effect, there is generally a sharp increase in use. However, to improve and sustain use in regions where mandatory belt laws apply, enforcement must be seen to be ever present.

The concept of contributory negligence has of late shown a greater acceptability in motor vehicle collisions that involve plaintiffs who are not wearing their belts during a collision. Contributory negligence is conduct on the part of the plaintiff that falls below the standard to which he or she is required to conform for his or her own protection. Further, as a result of such conduct, the plaintiff must have suffered harm. Thus, although defendants may be found negligent in violating their duty of care to the plaintiff and would otherwise have been held liable for the full extent of the proven damages, plaintiffs may either be denied recovery altogether or their damages may be reduced in proportion to the extent of their own negligence in not wearing a seat belt on the principle that their own conduct disentitles them to fully succeed.

In a motor vehicle action where this concept is raised, the judge or jury must conclude both that the seat belts are an established, desirable safety feature of the vehicle and that in the collision the available restraint system would have reduced or prevented the injury. It will be easier to establish the first element, the desirability of the use of the belt, where seat belt legislation is in effect.

Even in jurisdictions without seat belt legislation, the common law over the past two decades has been increasingly recognizing that failure to wear seat belts constitutes contributory negligence. Seat belt studies should make it clear that there is no limit on the amount that may be offset against the overall damages awarded. That is, contributory negligence for failure to wear seat belts should permit an offset against the global award to the full extent that expert evidence establishes that failure to wear the belts contributed to the injuries suffered, with no ceiling on this amount.

The causal relation between the violation of the statute (or the failure to wear the belt at common law) and the harm to the plaintiff must still be established. It therefore becomes necessary to analyze the kinematics of the collision, relate them to the described injuries, and predict the modification of the injury patterns that likely would have prevailed if the available restraint system had been properly employed.

Mr. Justice Linden, at the time Professor of Tort Law at Osgoode Hall Law School, urged the judiciary to consider the following (3):

Tort law should do what it can to encourage the use of seat belts. It has at its command the machinery for this purpose. If it were held that the failure to wear belts amounted to contributory negligence, it might help to educate the public to their undoubted effectiveness. Although the deterrent role of tort law has diminished in importance since the rise of liability insurance, the threat of a finding of contributory negligence may still have some force. The unbuckled plaintiff cannot merely shrug his shoulders and say his insurance company will pay for his negligence; it is money out of his own pocket if he neglects to strap himself in. Moreover, by adopting the seat belt defence, our courts may act as a catalyst to our sluggish legislatures. By moving into this field, perhaps tort law can stimulate more comprehensive legislative treatment, something that would be prefer-

able to the piece-meal approach of the common law.

We submit that if the common law continues to develop by itself, the seat belt defense will be increasingly recognized by the courts in the assessment of contributory negligence. If the seat belt defense is to be recognized by law, such statutes should be broad rather than restrictive to provide just penalty for unreasonable behavior on the part of an individual by which he or she contributes to injuries caused him or her by someone else's negligent act.

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Impact of Legislation and Public Information and Education on Child Passenger Safety

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The State of Tennessee passed legislation in 1977 (effective January 1, 1978) requiring that children under four years of age who are traveling in motor vehicles, with certain exceptions, be restrained in child-restraint devices (CRDs). A large-scale public information and education (PI&E) program was established that concluded with an analysis of the impact on child passenger safety of the legislation and PI&E program. The PI&E program involved two intensity levels of application: (a) a higher-intensity level, called the comprehensive plan (CP), and (b) a lower-intensity level, called the basic state plan (BSP). At the end of a two-year period, the CRD use rate was increased 103 percent over the baseline rate based on statewide estimates. The CP, when applied to target areas during the operational period of this research, was significantly more effective in increasing CRD use than the BSP. The expected number of deaths was reduced by 10 over a three-year period. There was a strong correlation between individuals using seat belts and individuals protecting their children by placing them in CRDs. Characteristics of nonusers of CRDs were identified through various statistical analyses. A nonuser is (a) less likely to be wearing a seat belt, (b) more likely to have a lower education-attainment level, (c) more likely to have more passengers in the vehicle, (d) more likely to be transporting older children (under four years of age), (e) less likely to be the parent of a child, (f) likely to be in a lower income bracket, and (g) less likely to own the vehicle.

The State of Tennessee passed legislation in 1977 requiring that children under four years of age who are traveling in a motor vehicle, with certain exceptions, be restrained in child-restraint devices (CRDs). The legislation became effective January 1, 1978. As a result of this legislation, a large-scale public information and education (PI&E) program was established in the state that concluded with an analysis of the impact on child passenger safety of the legislation and the PI&E program. The State of Tennessee, by passing an active child-restraint law, provided a unique research situation in the United States. Until Tennessee passed the restraint law in 1977, which required that children under four be protected in most moving vehicles, no state had any type of passenger-restraint law for any age group.

The research reported on in this paper was designed to investigate the effect of the Child Passenger Safety Program on the reduction of fatalities and injuries to children under four years of age in Tennessee for a two- to three-year period after the

law and PI&E programs were implemented. [This paper is one portion of the larger research effort of the Child Passenger Safety Program (1-12).] Study areas were selected and procedures were developed to collect data on CRD use. The data-collection instruments were designed to record information from both observations of CRD use and interviews with parents. The information collected included characteristics of children under four years of age as well as characteristics of their parents.

BACKGROUND

Target Areas

The target areas chosen for this research were representative of both urban and nonurban areas in Tennessee. The five major metropolitan areas of the state were selected for the urban sampling; i.e., Memphis, Nashville, Knoxville, Chattanooga, and the Tri-Cities area of Johnson City, Kingsport, and Bristol. Three nonurban areas, one in each of the geographical divisions of the state, were chosen to represent the more rural population. The nonurban target area was made up of merged data from Dyersburg, Columbia, and Morristown. The term more rural is used because the three areas in which the sampling occurred may not be considered rural by most standards, although the population that surrounds each town within an approximate 30-mile radius is largely rural. Each of the nonurban areas chosen, however, has towns within the 30-mile radius that have more than 5000 persons in population. The east Tennessee area has three towns within 30 miles that have more than 5000 residents, the middle Tennessee area has two, and the west Tennessee area has one.

An average of five sites was chosen within each urban area to collect data. The nonurban areas had one or two sites each. Shopping areas, regional and local, were selected as the sites to collect a large percentage of the data because of the large volume of traffic composed of parents who stopped with