speed roads, the estimate of increased fatalities would be too high. I looked several years ago at the possibility of a small electric car coming into the population and tried to estimate the safety consequences. We concluded that it was probably going to be a safer car per mile traveled than larger cars because it would be operated entirely in urban areas. It was a restricted range vehicle that just was not going to get out on high-speed roads as frequently as normal cars do.

It's quite possible that the micro-mini car or the very small car could be so much improved in its interior protection that it would overcome at least part of this momentum imbalance. Carl has talked about ways of doing this. The best estimates for the current car population and improvements from belting or air bags, I think are not in the 80 percent range (reduction in the chance of fatality), but more probably in the 30 percent range. That is my judgment from the current designs and the current price structures; the addition of air bags or full usage of belts would probably result in something like a 30 percent reduction in the probability of fatality. That's probably not enough to overcome the weight disadvantage.

If Charles Lave was correct this morning, in estimating that young people are going to buy these cars, there is a slight positive advantage because young people are substantially less susceptible to injury, and, when injured, they recover more quickly. If the population of these micro-mini cars turned out to be primarily young people, things would not be as bad as if they were all 55 year olds who would be more easily injured.

Well, where do we go from here? Safety wise, it seems to me that bringing a 1,000 pound car into the current United States population and road systems is inviting a kind of safety disaster. We seem to have three approaches to countermeasures for avoiding such disasters, and they operate kind of at three succeedingly difficult levels. The first one that everybody thinks about is education. Let's tell everybody to watch out for the little cars, let's put it in the drivers' education courses, we'll educate and tell Sonny when he goes out at night, "Take the big car if you're going to drink." We know the little car will be more dangerous to its occupants, and education and informing people may do some good. The second kind of countermeasure is to change the vehicle system to reduce the chance of an accident. This morning Pat Waller mentioned the possibility of painting all the micro-mini cars day-glo orange or red, and that is not a bad suggestion. We've done some work that shows that day-glo colored motorcycles are much more visible and less likely to be struck by a passenger car.

Finally, when things get bad enough, and we've decided neither one of these solutions is adequate, we had better think about the possibility of separating vehicles on the highway when they are not physically compatible with each other. I know Don said this is going to be a very difficult thing to do and the society is not going to accept it. But there is some acceptance of such a countermeasure now, and there may be more in the future. The New Jersey turnpike has separated lanes for trucks and cars over much of its length now. Although cars are permitted in the truck lane, there are car lanes that trucks are not allowed to enter. If you travel on the New Jersey turnpike in a car, you can choose to avoid the trucks. Better yet, if you go to New Jersey, take the Garden State Parkway which allows only cars and let the trucks take the turnpike. They go almost the same place and you can travel much more comfortably and safely in an environment with only cars. Another example of positive separation is that we've put sidewalks into almost all of our cities for pedestrians. Years ago people walked in the street, but when the frequency of interaction between cars and pedestrians or maybe even between horses and pedestrians got so big that it was a problem, we put the pedestrians in a separate place. We have pedestrian overpasses and underpasses; we've physically separated most of the pedestrians from the vehicles. We have railroad rights-of-way; we put railroad trains on tracks and have grade-separated crossings that preclude the possibility of cars from getting into the way of railroad trains and vice versa. We have bicycle paths in lots of cities, and bicycle lanes on the streets marked to tell cars to stay out of these lanes. There are many Moped lanes in Europe serving the same purpose. I suggest that the highway engineering fraternity ought to think long and hard about what is going to happen when and if a substantial proportion of the United States car population is in this 1,000 pound class and has to survive in traffic with an average weight of 3,000 pounds or more. Otherwise, the little guy is going to be in trouble. Traffic engineers believe that this will be a bigger social and political problem than an engineering problem. The prospect of such changes deserves thought at this point because, if the micro-mini cars are as susceptible to damage as the physical model suggests, the public will demand such changes sooner or later. They're going to say "Get the big cars off my road, because I drive a little car. Do something to make me safer." It has been done for the bicycles, the pedestrians, and the Mopeds, and it may have to be done for the micro-minis. I think as a last piece of advice, we had some talk this morning about safety matter and insurance and how the economics of insurance is related to it. If the environment does not change, perhaps you should take the money that you save in buying and operating a micro-mini and buy term insurance on your life.

DISCUSSION:

JIM PLINE: I've got one. As a traffic engineer, we can hardly afford to build and maintain what we've got; we can't build separate facilities, so I guess we'll have to kind of check that out won't we?

JAMES O'DAY: I'm sure you will.

LAWS, STANDARDS AND LIABILITY

Andrew Hricko, General Counsel
Insurance Institute for Highway Safety

JIM PLINE: Our cleanup hitter this afternoon is Andrew Hricko from the Insurance Institute for Highway Safety. He is the General Counsel and Secretary Treasurer for the Insurance Institute in Washington, D.C. He has been with that organization since 1964. Prior to working for them, he was Senior Attorney in the Legal Division of the Board of Governors for the Federal Reserve System and has also served as Assistant Attorney General for Pennsylvania.

ANDREW HRICKO: The case law relating to the mini and micro type vehicles is quite new and quite limited. However, using the principles of law applicable to products in general, I've come to

some basic conclusions. Decisions have been limited to findings of responsibility of the micro-mini vehicle manufacturer. Now down the pike, we'll be able to see cases coming that involve the potential liability of traffic engineers and governmental agencies for the maintenance of such roadside appurtenances as signposts, guardrails, and the other objects that were designed to breakaway with the regular size cars, but do not function well with mini vehicles. Future cases will face some basic questions. Is it the responsibility of government to change the driving environment to accommodate a rapid change in motor vehicles or is it the responsibility of the manufacturer to produce products which can safely operate in the existing environment? Now these questions have not been answered, but they are going to be the ones that will be coming up in the not too distant future.

We do have some answers to the question "What duty does a car manufacturer owe to the purchaser of a small car who has knowledge that if he is involved in collision with a larger car he is going to come out second best?" Does such knowledge preclude recovery? The case decided on appeal early last year, Dorsey versus Honda Motor Company, provides some insight into the possible line of reasoning which will follow in future cases involving mini or micro cars. Mr. Dorsey purchased a Honda AN 600 which complied with Federal standards as it relates to seat belts, belt anchorages, and steering wheel displacement. However, it was built prior to the effective date of the Federal Motor Vehicle Standard 208 and was not held to a crash worthiness standard. Dorsey testified that he understood that his car could be seriously damaged in a collision with a larger car, but he did not know any specific crash characteristics of the Honda. Dorsey was involved in a crash with a standard size car weighing about 3600 pounds. The car was traveling about 3 to 5 miles per hour. Dorsey's car weighed a little over 1300 pounds and the impact was about 30 miles per hour. They estimated that it was equal to a 20 mile per hour barrier crash. The Honda failed specifically in three areas. The A pillar deformed, rearward, about 10 inches; the seat latch broke, pushing Mr. Dorsey to the left and towards the pillar; the seatbelt failed to adequately restrain him, it being too elastic. He wore the regular shoulder belt. Mr. Dorsey's legs were fractured and he suffered severe permanent brain damage. Dorsey and his wife sued on the grounds of negligent design; negligent failure to warn of design defects; strict liability and breach of warranty. He won on every theory. The jury awarded him $750,000 for his injuries, his wife got $75,000, and they also took a look at Honda's design and slapped them with a $5,000,000 punitive damage award. The trial court judge went along with the compensatory damage but denied the punitive damages. Mr. Dorsey appealed. And Honda cross-appealed for whatever damages were assessed against them. The Plaintiff proved that Honda's own test, performed by a wholly owned subsidiary, showed that the "A" pillar would deform, and that the restraints would not prevent an adult male dummy from impacting the interior of the car in a 30 mile per hour crash. The subsidiary advised Honda not to put the vehicle on the market without enlarging either the front of the vehicle or redesigning the inside to provide a little more room. Honda ignored the advice and exported the vehicle to the United States without changing it or warning prospective purchasers of its crash characteristics. Plaintiff's experts proposed numerous safer alternatives to the Honda's design; lengthening the hood and enlarging the passenger compartment; using the heavier engine and heavier metals in construction; using metal reinforcements for the passenger compartment and the "A" pillar; redesigning the seatbelt to prevent submarining; and using a less elastic fabric for their seatbelts.

These items are the keys relating to a case involving a micro-mini car. Not those specific ones, but the fact that you have to show that there's something besides the size of the car that could have been improved in order to increase the chance of survivability. Honda's defense was that the sole approximate cause of Dorsey's injuries was the relative size of the two vehicles. The crash worthy cases up to that point had indicated that if one buys a small car, one can't complain if he is injured because everyone knows that you get injured in a small car. Supporting this premise was a case back several years ago, involving a Volkswagen. It's Dreisinstok versus Volkswagen, a Virginia case. In that case the plaintiff purchased a microbus. The manufacturer put the seats as far forward as it could to enlarge the cargo space. The court looked at that case and ruled in favor of the manufacturer basically on the grounds, "what you see is what you get". You could see that that car wasn't going to have much room for your knees. You could see the dangers of a frontal collision, and it was, in a sense, an acceptance of the risk. There was no offer of evidence in that case that perhaps there could have been a stronger bumper, that perhaps the frame could have been built a little bit better. It was just a question of you could see the deficiency and no evidence was offered that those deficiencies could be corrected.

In the Honda case, the lower court held that size alone is not a bar to recovery, if you can prove that the manufacturer can make improvements which would have protected you from the injuries received. This theory was also upheld by the Appeals Court. The Appeals Court stated that you could have improved that vehicle without making one change, literally, in the size of the vehicle. And that's what Mr. Dorsey wanted. He wanted a small car and the changes that could have been made would have been very simple. The Court said there was no relationship between the "A" pillar, the design of the seat track, or the seat assembly, the choice of webbing and vehicle size. Specifically, and I'll quote, "Dorsey's willingness to buy a car with a small passenger compartment is not a willingness to be supplied with a passenger compartment that is negligently designed or defectively constructed." The court distinguished the microbus case on the grounds that there was no evidence that any improvement could be made.

Downsizing vehicles may impose a higher duty on manufacturers to compensate for the small size by using improved safety technology. Dorsey's case is a very strong recent authority for this. Although Honda met the specific Federal standards, its crashworthiness could have been improved by using known safety devices and better materials. The court cited, for example, that nothing would happen with the size of the car if they had made the webbing and the safety belt less elastic. One could argue that the $5,000,000 punitive damage was for failure to surpass existing safety standards. The plaintiff was able to prove that Honda was aware that the safety standards were inadequate to protect passengers in a collision, and that it knew ways of improving the vehicle's crashworthiness, but never implemented them.

In a recent series of crash tests, done by NHTSA, both the Honda and the Volvo failed the 35

mile an hour crash test the first time around. The second time around all they had to do was move the latch back on the safety belt a little bit and make them a little bit stiffer to pass the test. They were able just by those minor changes to make a difference to the occupant between being dead or alive.

The Dorsey case is not revolutionary and is fully within the mainstream of traditional tort law. To determine whether liability would be found, courts inquire as to whether the defendent has violated a safety standard or acted in a manner inconsistent with industry custom and usage. However, to say that mere compliance with a standard and customary practices should absolve a manufacturer of liability tends to defer the implementation of new technology and allows industry to set its own standards. This result is particularly intolerable when there is a widening technology gap between what actually is being used to protect people and what could be used. There are many improvements in the motor vehicle that could be inaugurated. You've seen some of them on the screen previously concerning the RSV's.

The courts have looked upon this subject for many years. There is a 50 year old case that Judge Learned Hand wrote in a landmark decision, a decision that is still being cited in some cases: "A whole calling may have unduly lagged in the adopting of new and available devices." And, in that case they failed to adopt a safety device and were found wanting. Even in the basic law book of torts that you read when you are starting law school it says, "where common knowledge and ordinary judgment will recognize unreasonable danger, what everyone does may be found to be negligent." There have been some accusations that the automobile manufacturers are not using available safety devices on the grounds nobody else is doing it. There are sufficient court decisions to show that the responsibility is there and, if you don't exercise it, you can get burned.

Those who come into contact with a product may reasonably expect its supplier to provide feasible safety devices in order to protect them from dangers created by its design. The existence and feasibility of excellent automotive safety technology that can protect people in small fuel-efficient cars is common knowledge throughout the auto industry. Increasingly, courts will be called on, as in the Honda case, to decide to what extent the industry will be held accountable for disregarding that technology and to what extent conservative safety standards will protect manufacturers. Now NHTSA itself has refused to hold small cars to a lesser standard because of the availability of superior safety technology. In February, a year ago, NHTSA denied a petition to reclassify cars weighing less than 1400 pounds to reduce the number of standards applicable to them. The agency stated, (as a matter of fact they are talking about one of the cars that you'd seen on the screen) and I'm quoting NHTSA, "the technology is available to build relatively light passenger cars that achieve high fuel economy while also complying with the Federal safety standards. Further, research and tests have shown that substantial levels of safety protection can be designed into small cars." For example, Western Washington University has built an experimental vehicle, the Viking 6, that is lightweight, 1200 pounds, yet will protect its occupants in a 41 mile per hour frontal barrier crash test. Current safety standards specify tests of 30 miles per hour.

The proposed Federal Product Liability Act would create a presumption that if you have an existing safety standard and comply with it, your vehicle is automatically not defective. Now, if this Act is enacted, every effort should be made to ensure that safety standards are reasonably consistent with available technology. This is especially critical in the microcar area. Standards written in the '60's and '70's which protect occupants of full size cars will not, in many cases, protect the occupants in the microcars. An example is the seatbelt assemblies. The belts installed in Dorsey's Honda were inadequate and yet they met the standard. The standard is not related to the size of the vehicle passenger compartment. Thus, the webbing that would restrain a man before he struck a hard surface in a larger car would be ineffective in a much smaller vehicle.

Now, of course, one would assume that the manufacturers of the microcars would make every effort to incorporate the latest safety devices in their vehicles. An article in Fortune magazine in November of last year noted that Honda had just introduced a new City car, sold with a companion motor bike that collapses and fits neatly into the trunk. The microcar has a 1200 cc engine and is jammed with features meant to appeal to younger drivers, including a refrigerated drawer in the dashboard that holds a quart of beverage cans. Now we may have seen the beginning of a new product, the four pack to replace the six pack. It's easy to understand why auto manufacturers are getting increased auto product liability cases with that kind of design planning. I wouldn't want to be the attorney trying to explain to a jury why we have the refrigerator with the beer in it right where we used to put the air bag. That, quite frankly, is what is going to happen. NHTSA rightly refused to hold small cars to a lesser standard than other passenger cars. However, as mini and microcars become more popular, NHTSA should carefully scrutinize all its standards to assure that they will afford protection to occupants in all passenger cars, regardless of size. If NHTSA doesn't do its duty, some other portion of the government is going to. As Judge Learned Hand put it, back 50 years ago, "courts must in the end say what is required; there are precautions so imperative that even their universal disregard will not excuse their omission."

DISCUSSION:

QUESTION: The precedent caused by the general manufacturer of an automobile can create a situation of establishing a standard for others to meet, can it not?

ANDREW HRICKO: That's correct. As a matter of fact, there was an interview given by, I think, Mr. Peck out in Los Angeles and he made the point that the RSV vehicles, for example, if brought to a stage where they are mass produced or at least made in some numbers, that would become the standard for the industry and every manufacturer could then be potentially liable for not going to that standard. Yes, very definitely, there are some that predict that is going to come about.

QUESTION: I understand there is experience with the small cars where they are involved in fewer accidents because they are driven slower and just locally. So that the insurance rates are less with the little cars which is why it is an interesting crossover. What do you think is the likelihood of

passage of the Product Liability Act? Can you tell me the number of that legislative action? Do you think it will pass?

ANDREW HRICKO: I don't know. It's been around, I think this is the third time its been around in various forms. I really haven't been following it that closely. I do know what provisions are called for, but I don't know what the prospects are.

QUESTION: Changing the universe to accommodate the micro is to suggest the other course of action is to make the micro fit. If the micro is required to fit the world as it is and is required to meet and adopt the available technology, if this was required through technology, is it still going to be economically attractive?

ANDREW HRICKO: I don't know because I don't know how much you have to mass produce to determine the exact cost of things. But when you start talking whether it is economically profitable to produce a car that should have certain standards, you should also consider the cost of having to go to every guardrail in the United States and put a rub bar on the thing to accommodate this vehicle. How much does that cost, should that cost be considered into it? I mean I am paying it and you're going to pay for it in the gas tax. It's going to come out of our pocket. One could argue why should someone be able to put a product on the market and then everybody else has to accommodate his profitmaking, rather than the other way around.

UNIDENTIFIED: I particularly wish to compliment everyone on their excellent presentations of materials covered and it was delightful to be here. I have a question for my good friend Donald with regard to having to soften various appurtenances along the highways. We should worry about these small sign supports that you folks discovered can't even take care of the 1500 pound car instead of why we have to take care of them now when industry didn't. The 1100 pound car compounds the problem since there are so many signs. There should also be some thought given to vehicle side panel design (you apparently were aiming at the head-on collisions there) I am also wondering about why you illustrated the design for 1200 pound cars when you may get into 700, 1400 and 2100 pound vehicle side hits 15 or 20 degrees on that particular type of attenuator, whether the problem really is the first one-time accident.

DON WOODS: In both cases you are correct, we have made estimates of what the reduction and the momentum change that would have to be to accommodate the 1200 pound car. It looks like (I am having to recall this number), I think it was about 235 pound-seconds, I guess it would be about the kind of change that would be compatible in a 1200 pound design. That's considerably weaker than all base bending type, all the fracture type supports, that we have. So what we are literally saying is the U-post and woodpost are obsolete in this kind of thinking. The slip base designs, the small post slip base design are marginal. They are in the 250 range, 275 range, so they still would be compatible but then we get into the "max" problem with the big signs so that's going to be fundamental. With respect to the crash cushions, I did not try to go through a detailed design and decide if approximately 2/3 of the hits were with the crash cushion, so they are very significant parts. I did predicate all the thinking on the head-on hits. The primary reason for that was that I thought they will be what the design people would be most interested in. The number of modules was related. We would certainly have to consider the side hits later when getting into those larger modules and to think about adjusting for excessively high deceleration. It certainly does exist, even with the systems we have out there now.

ANDREW HRICKO: I'm sorry, I am confused, and always have been I might add, with regard to the "G" force consideration by the municipals, the Federal highway, and industry people who are out there designing the appurtenances. The Federal highway used the 12 G's based on the high estimate of 50 milliseconds. You know the NCHRP is 30 milliseconds, but I am wondering how that 30 and 40 G's Dr. Clark mentioned here is tied down. I wonder if you two could try to resolve the meaning or interpretation?

DR. CLARK: The National Highway Traffic Safety Administration has, as I read it, assumed that the safety designs are utilized and its standards based on using good criteria. So, if indeed you have a full belt system on or an effective air bag system for riding through the 30 mile per hour crash, the question is not damage to the passenger compartment, but is survivability. It's marginal with belts. You begin to break ribs and so on. You should walk away from it with air bags. We've shown we've got good air bags to over 50 miles an hour. Unbelted, you begin to hurt yourself after being in a crash at 5 or 6 miles an hour. I think the LD-50 for dropping a person onto a hard surface killed about half the people, in something like 15 feet. It's a lethal event for half the people that drop in the main squatting position. So, indeed, if you are unrestrained, the levels are a lot lower. We're beginning to recognize at last that 90 percent of us are riding around without restraints. And, we're going to do more research now on what happens in the unrestrained condition. I used to say the manufacturer president of the company ought to be asked to bang his head at full velocity on anything on the surfaces of the car and have it not hurt him. We know that won't happen and yet we know how to design for that. So, typically, in the belted crash, your face is going to hit the steering wheel, you're going to break your facial bones. Well, that isn't a very serious injury, but we can do a lot better than that. So it is time to use the knowledge that we have, not just in restraints, but in every other feature of the car design: on better visibility, better protection for pedestrians, and so on. It's on that basis that I say, if we use the knowledge we've got now, we could cut that 150, 140 deaths per day by perhaps 80 percent. It's tragic that we don't think hard about this. We ignore it and walk away from it.

It used to be said of sports car drivers that they could always duck out of the way of a collision--having a mentality for this and continuing to examine the escape routes and having vehicle characteristics so the car can do a lot in ducking out of the way. Americans generally do not use anywhere near the full handling capabilities of their vehicles. The problem is we get our licenses without having to examine the emergency driving situation. We should have more practice. As we get to the smaller cars, this characteristic isn't better, it's worse, as you are saying. Particularly the three wheelers. It is being recognized by the responsible designers such as Walter Korff that we should stay with the larger tires and not have skid

out. We should sacrifice a little bit of gas mileage for handling characteristics. He does make a point for having a low center of gravity nearer the two wheels in front so on a skid out there is understeer rather than the spin of oversteer.

DON WOODS: There is certainly an instability problem and there are people in the audience that know a great deal more about it than I do. Let me just comment about the two cars I have. I have Toyota frontwheel drive and I have Dodge Colt rearwheel drive. Both of them have roughly the same size engine. The Colt is very unstable under any condition. It has far more power than you can accommodate on any kind of friction or surface that is not absolutely dry. If you accelerate hard, it can come around in just a split second. The Toyota, on the other hand, is as stable as any vehicle I have ever driven. The front wheel drive on ice and snow and slick surfaces is very hard with the accelerator. What it does in braking, I don't know. I brake cautiously on snow and ice because I don't see much of it. I stay way back and I brake gently on it. What it would do under that condition I do not know. But we do have some problems with wheel size and, those that have heard me before, we have one bridge test in which there was a 13 inch opening from the bottom of the beam down to the deck. A car went under it, snagged on the post, and that's a whole lot lower than all the barriers we have out here. That's kind of a repetitive message, but we're going to have to do something drastic. There are ways they are doing it right now--to try and adapt to the smaller cars.

QUESTION: DOT some years ago had a research safety vehicle program and they were pursuing two designs primarily; the engine in front and one with the engine in the rear. I'd just like to know the outcome and final recommendation of DOT on the research safety vehicle?

DR. CLARK: Guess I need to answer that. The research safety vehicle program has been very successful. It has shown possibilities for control deformation in crash worthiness and improved restraints to live through 50 miles an hour crash. It has also shown how close we are to the crash prevention devices, such as the radar brakes. They are beginning to be used in Europe. The periscope design visibility systems were used for a while. We've thrown them out. Unfortunately, the major rear accident I note is someone coming out of an almost blind spot. We know how to deal with that problem and yet we don't have the solution presented to us. The engine in the front versus the engine in the rear has not been an issue in the safety vehicle design. It really is a mass distribution and spring loading problem. You can design a good car to be either case or you can design a bad car. I really don't know enough about it to give you the trade-offs. It is quite possible, though, to have a prevention car that is safer than the ones we've just reviewed. The message is that we know how to stop collisions, severe crashes and the killing of people. Notice that in 1957 Jim O'Brien said, "Let's put a hydraulic rear bumper on the car". In fact, he said, "I have trouble getting into my parking spaces so I'll have it pulled back when I'm driving slow and as I get up to speed I'll extend it." That design was used in the Fairchild experimental safety vehicle. The design was heavy and expensive even as hydraulic retrofits. They know how to make hydraulic designs in much lower weights. The trade-off that we've experimented with was a foam filled box beam product and the auto industry has not picked that up. The Viking 6 used it on a 1200 pound car without injuring the people if they were restrained.

COMMENT: Just two quick comments on the safety vehicles themselves. Some of the interior design that has been used is not being used on American cars. They are being tested and used elsewhere. The windshield in which they put the flexible material on the inside is being used by a number of firms in Europe, but it still hasn't been approved for use in the United States. Putting this all in perspective the air brake on trains took 40 years for adoption. So, perhaps we should look upon some of these things in the proper time frame when we get around to it in another 40 years maybe.

QUESTION: You all seem to be in agreement that there will be forthcoming problems with the introduction of microcars in the United States. Have you thought about the onset of a political campaign to prevent their introduction?

DR. CLARK: The politics of stopping free enterprise is not in good shape in the United States today. I don't think that is likely to happen, the leverage we have in our democracy is through the interest of people. It has indeed proved very difficult to involve the people in their own safety in bills, and to involve them in saying somebody else should not ride around in a little car. I think it would not be feasible. I think, in fairness, I should say NHTSA will watch the numbers that develop, we'll count the bodies, and if things do get too bad, there can be a vote for the defect action which does not require a standard, but simply saying, this vehicle is too unsafe and requires that it be removed or taken from the road. Or, action to improve the standards. There is quite a feeling in the agency that the three wheel car should not be called a motorcycle.

ANDREW HRICKO: There is just one bit and that's with the NHTSA doing away with passenger restraints standards which would have been involved with these vehicles also. They would have to come up with certain requirements, at least at 30 miles an hour. Although not required, it is not dead. It is in the courts at this time. So it may be turned around there whenever a decision is reached.

JAMES O'DAY: I think there is sort of a parallel to the microcar in the introduction of Moped in the United States. Something like four or five years ago there was quite a flurry of activity in the thought that Mopeds were going to come in and destroy the world, or at least cause or come in such numbers that there were going to be enormous increases in injury and so on. I think the public is going to tend not to go with Mopeds, as clear as I can tell. In spite of all the good words this morning, it wouldn't surprise me to see the public choice that they really don't want microcars. Something in the order of 1500 or 1800 pound cars is as low as they want to go.

DR. CLARK: Unless a safe microcar is made which can be done.

JAMES O'DAY: I'm not sure the choice is just on safety. I think there would be other things that would control it. Mopeds must not be doing the things that they thought they were going to do. And they haven't done it.

DON WOODS: Another problem that we still face is that the accident is a relatively rare event in any given automobile. They go into court and argue that they cannot sell a vehicle because it is unsafe. Until you have a very strong track record, that's a weak argument. It is in fact a rare event still.

One of the sections that we took out of a report after review was the probability of having an accident with signs. The reason this was taken out is the thinking that it would lead too many people into believing it was not really a problem. Because the fact that only a 3 percent chance exists that any vehicle will hit a sign support in any given year, and then you have one of the probabilities of injury, and all these things combined give you extremely small numbers, .001 or .002 probability of severe injury. Those are all meaningless to people when you try to talk to them. We're finding we screen that out completely. It is a problem only in the sense that there are so very many of them out there and therefore a number of them are going to be hit. I don't foresee that the microvehicle is going to be 50 percent of the traffic stream. I think the speakers this morning guessed it as considerably lower than that. If you have a 7 percent switch to the microvehicle, the change in fatality would be barely measureable. General downsizing may mean its going to happen across the whole board. It is when you aggregate them across the whole country that the numbers then become very significant. I've got to say that that's a unique problem. Almost all of our safety problems are very low probability events. And we still have to treat them all to make them as survivable as they can possibly be.