MOTOR VEHICLE INFORMATION AND COST SAVINGS ACT OF 1972—OVERSIGHT

HEARINGS

BEFORE THE

SUBCOMMITTEE ON CONSUMER PROTECTION AND FINANCE

OF THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

NINETY-FIFTH CONGRESS

FIRST SESSION

ON

THE MOTOR VEHICLE INFORMATION AND COST SAVINGS ACT OF 1972

MAY 2 AND 9, 1977

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MAY 6, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON CONSUMER PROTECTION AND FINANCE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:15 p.m., in room 2123, Rayburn House Office Building, Honorable Bob Eckhardt, chairman, presiding.

Mr. ECKHARDT. The Subcommittee on Consumer Protection and Finance is opening hearings today on the Motor Vehicle Information and Cost Savings Act of 1972. The National Highway Traffic Safety Administration is charged as the agency to control the act.

It is the intention of this subcommittee to conduct a clear and current overview of the existing base of consumer protection legislation. This is of the first importance to the committee.

We feel with respect to this act, that the basic act is a sound one, but now 5 years have passed.

Much of the Motor Vehicle Information and Cost Savings Act of 1972 has not actually been put into effect, and excessive costs for automobile repairs are even more onerous today than they were at the time of the passage of the Act.

Except for the new car price and price of new tires, auto costs are up more than the cost of living.

I have here several charts that demonstrate these points [See p.4]. It will be noted here that gasoline is at the highest rate, total auto operating costs per mile are somewhat lower. The Consumer Price Index is considerably lower, and insurance costs, which reflect the costs of auto repair, have shot up in 1975 to a figure that exceeds the other costs except gas, oil and lube.

Title I of the act provides bumper standards to prevent damage to the auto in low speed collisions. The existing bumper standard, a 5 mile-per-hour standard, only prohibits damage to safety components. But the first standard under this act, aimed at preventive monetary damage, has seen years of delay and will not be effective until September of 1978.

Fender benders and other collisions requiring repairs have caused unconscionably high repair bills and presently $3 billion a year is expended in the crash parts industry wholly controlled by the

automakers. That industry has now been under one antitrust investigation or another by the FTC since 1966, and nevertheless has raised its prices more rapidly than any other automobile related segment of the economy.

This second chart compares crash parts prices to the consumer price index, and to new car prices, and you can immediately see what is happening in that area.

As of January 1, 1977, the total increase in crash parts prices was 82.5 percent, and since 1967, it was 157 percent.

Of course, there has been some lag in the cost of insurance occasioned by this increase in crash parts, but within 1 year, 1975 to 1976, insurance costs increased by almost 30 percent.

Title II of the act provided for a comprehensive study and investigation of the methodology of determining comparative damage susceptibility, crashworthiness and ease of diagnosis and repair of autos. It also provided for developing methodology for disseminating and assuring dissemination of information to consumers, and finally for establishing procedures requiring dealers to distribute information concerning relative costs of different makes and models of automobiles.

There has been virtually no implementation of this section of the act by the National Highway Traffic and Safety Administration.

Under title III, at least five diagnostic inspection demonstration projects were to be started by January 1974. Safety and emission standards compliance was to be studied through these projects looking toward reduction of maintenance costs.

Senate hearings had estimated between $8 billion to $10 billion per year was spent for unnecessary or unsatisfactory repairs. That is about one-third of the total repair costs.

There has been some development and some informatioin garnered by these five demonstration projects and we intend to hear about the reports concerning these projects at this hearing, and also to inquire to what extent the agency has utilized this information to further develop the other provisions of the act. Since 1972, maintenance repair costs have continued to rise more rapidly than the cost of living, and more rapidly than any automobile-related prices except those for crash parts.

As you will notice on the third chart, the highest of the curves indicates repair costs, and on that curve are also the other auto related costs for various items.

The BLS index of prices for auto repairs and maintenance, which excludes body repairs, increased by more than 40 percent from 1972 to 1976, and by 89.7 for the longer period form 1967 to 1976.

There is a promising indication in DOT reports on the demonstration projects, provided to the subcommittee staff, that diagnostic inspections have been able to reduce unnecessary repairs substantially, while also increasing fuel economy through improved consumer information about needed maintenance repairs.

In light of the vast recent increases in the cost to consumers both of repairs and of all automobile operating expenses, the subcommittee will be most interested in knowing of any such bright spot in the overall national picture, even under experimental conditions. More particularly, we look forward to an evaluation, by several of our

witnesses, of the potential of the diagnostic inspection concept for obtaining any such consumer cost reductions on a larger scale.

The final title of the Motor Vehicle Information and Cost Savings Act with which we will be concerned here is the prohibition of odometer tampering. Some estimates of the consumer losses as a result of this type of fraud imply annual costs to unwary buyers of used cars in excess of $1 billion per year.

I have asked the Department of Transportation for a status report on this title, both with respect to defining the extent of the illegal activities addressed and with respect to enforcement of the title's provisions.

[The charts referred to were received for the record:]

COMPARATIVE PRICE CHANGES:

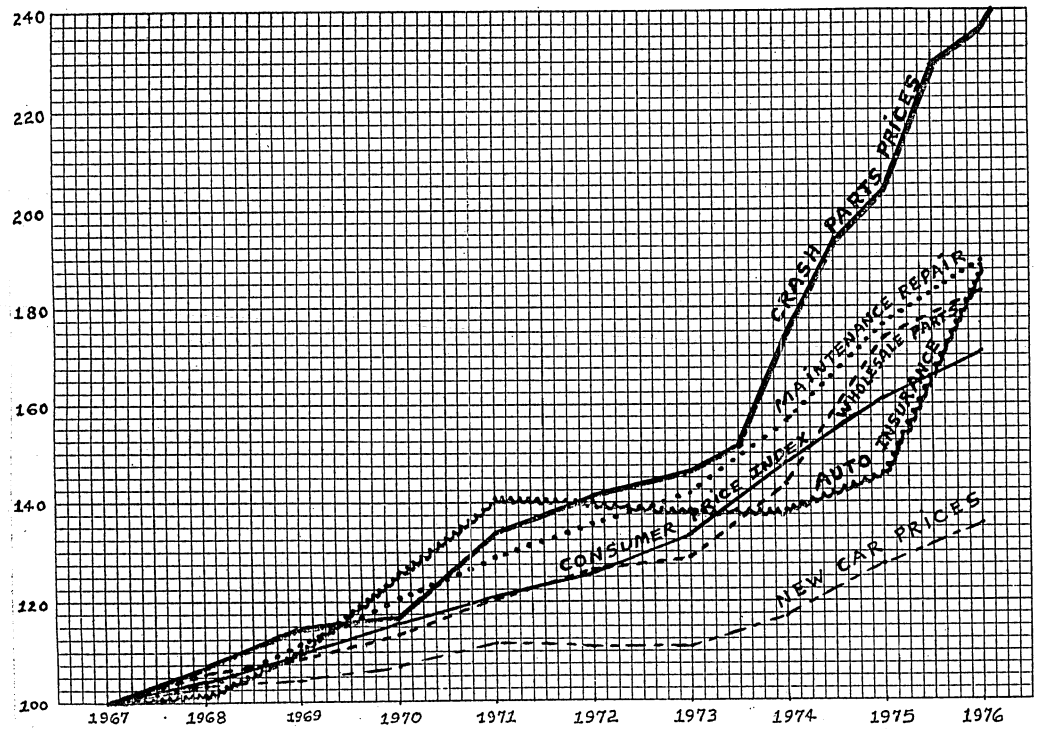
AUTO MAINTENANCE AND REPAIR ITEMS, 1967-76
(1967=100)

YEAR	CONSUMER PRICE INDEX[a]	NEW CAR PRICE INDEX[a]	WHOLESALE MOTOR VEHICLE PARTS[a]	MAINTENANCE REPAIR[a]	AUTO INSURANCE PREMIUMS[a]	STATE FARM CRASH PARTS PRICE INDEX[b]
1967	100.0	100.0	100.0	100.0	100.0	100.0
1968	104.2	102.7	105.1	102.9	102.3	107.1
1969	109.8	104.3	108.4	112.2	111.4	114.8
1970	116.3	107.4	112.9	120.6	126.7	117.0
1971	121.3	112.0	120.2	129.2	141.1	133.6
1972	125.3	111.0	126.0	135.1	140.5	140.9
1973	133.1	111.1	129.0	142.2	138.0	146.2
1974	147.7	117.5	143.8	156.8	138.1	174.1
1975	161.2	127.6	172.8	176.6	145.9	203.4
1976	170.5	135.7	182.7	189.7	187.9	235.3

a. SOURCE: Bureau of Labor Statistics.
Based on average prices over the year.

b. SOURCE: State Farm Mutual Automobile Insurance Company, State Farm Crash Parts Price Index and revisions obtained from the State Farm office in Bloomington, Illinois. Based on prices as of July 1 each year.

COMPARATIVE PRICE CHANGES:
AUTO MAINTENANCE AND REPAIR ITEMS, 1967-76
(1967=100)



CRASH PARTS PRICES

COMPARED WITH NEW CAR PRICES AND THE

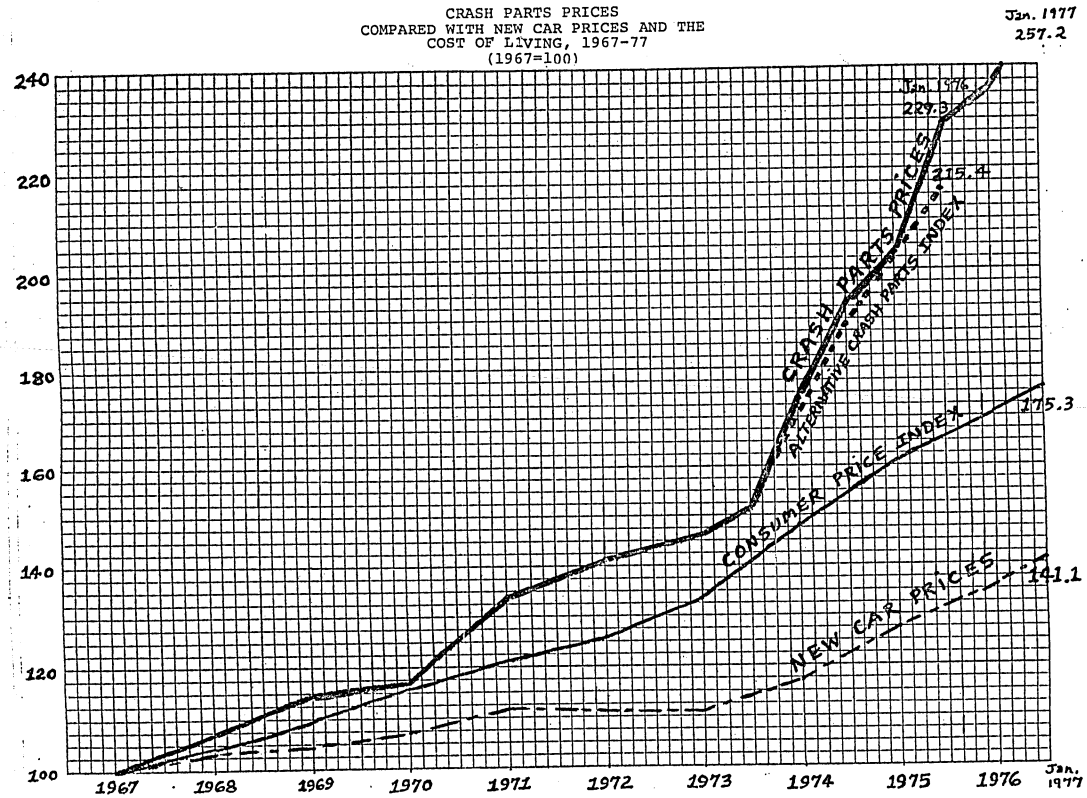
COST OF LIVING, 1967-77
(1967=100)

YEAR	CONSUMER PRICE INDEX[a]	NEW CAR PRICES[a]	REVISED STATE FARM CRASH PARTS PRICE INDEX[b]	ALTERNATIVE CRASH PARTS INDEX[c]
1967	100.0	100.0	100.0	100.0
1968	104.2	102.7	107.1	107.1
1969	109.8	104.3	114.8	114.8
1970	116.3	107.4	117.0	117.0
1971	121.3	112.0	133.6	133.6
1972	125.3	111.0	140.9	140.9
1973	133.1	111.1	146.2	146.2
Jan.,1974	147.7	117.5	151.5	151.5
July,1974			174.1	-
Jan.,1975	161.2	127.6	193.0	189.2
July,1975			203.4	-
Jan.,1976	170.5	135.7	229.3	215.4
July,1976			235.3	-
Jan.,1977	175.3	141.1	257.2	-

a. SOURCE: Bureau of Labor Statistics. Based on average prices over the year, except January, 1977.

b. SOURCE: State Farm Mutual Automobile Insurance Company, State Farm Crash Parts Price Index and revisions obtained from the State Farm office in Bloomington, Illinois. Based on prices as of July 1 each year through 1973.

c. SOURCE: Council on Wage and Price Stability, Press Release, Feb.18,1976. This is the State Farm Index through Jan.1974. However, the CWPS presented alternative rates of change for Jan.,1974-Jan.,1975 and Jan.,1975-Jan.,1976, citing an unnamed insurance company sample of 7 crash parts for 6 current model cars. Smaller samples used by other insurance companies showed even smaller changes, according to the CWPS release.


CRASH PARTS PRICES
COMPARED WITH NEW CAR PRICES AND THE
COST OF LIVING, 1967-77
(1967=100)
Jan. 1977
257.2
240
220
200
180
160
140
120
100
Jan. 1976
229.3
215.4
CRASH PARTS PRICES
ALTERNATIVE CRASH PARTS INDEX
175.3
CONSUMER PRICE INDEX
NEW CAR PRICES
141.1
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
Jan. 1977

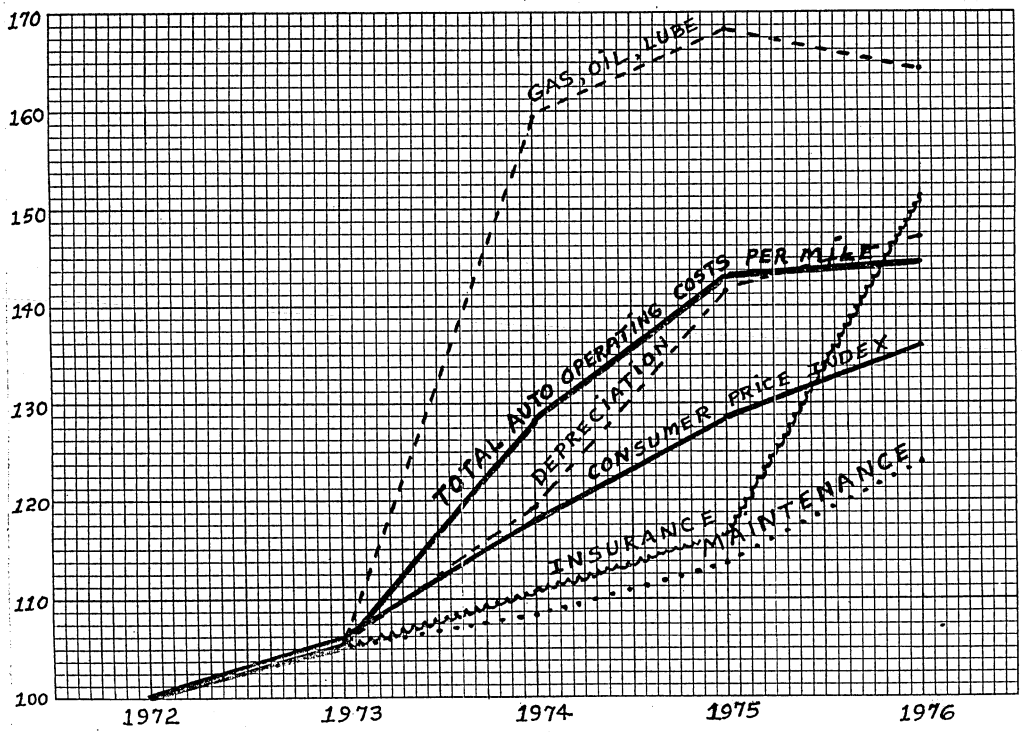
CHANGES IN AUTO OPERATING COSTS PER MILE, 1972-76

[INTERMEDIATE CAR - 10 YEAR USAGE - 10,000 MILES PER YEAR]

Type of Cost Per Mile	1972	1973	1974	1975	1976
TOTAL (¢)	12.4¢	13.1¢	15.9¢	17.7¢	17.9¢
Gas, Oil, Lube	-	3.5¢	5.2¢	5.5¢	5.4¢
Maintenance	-	2.5	2.5	2.7	2.9
Depreciation	-	3.4	3.9	4.6	4.8
Insurance	-	2.2	2.3	2.4	3.1
Other	-	1.6	2.0	2.6	1.7
INDICES (1972=100)					
Total Cost Per Mile	100.0	105.6	128.2	142.7	144.4
Gas, Oil, Lube	-	105.6	159.6	168.5	163.9
Maintenance	-	105.6	108.6	113.8	124.1
Depreciation	-	105.6	119.2	141.4	147.0
Insurance	-	105.6	111.0	116.3	151.3
Consumer Price Index	100.0	106.2	117.9	128.7	136.1

SOURCE: Hertz Corporation.

CHANGES IN AUTO OPERATING COSTS PER MILE, 1972-76
[INTERMEDIATE CAR - 10 YEAR USAGE - 10,000 MILES PER YEAR]
(1972=100)



Our first witness this afternoon is Mr. Albert Benjamin Kelley, who is Senior Vice President of the Insurance Institute for Highway Safety.

Mr. Kelley, we are very glad to have you here. Will you identify your associate and then you may proceed as you desire.

STATEMENT OF ALBERT BENJAMIN KELLEY, SENIOR VICE PRESIDENT, INSURANCE INSTITUTE FOR HIGHWAY SAFETY, ACCOMPANIED BY BRIAN O'NEILL, VICE PRESIDENT FOR RESEARCH; PAUL TAYLOR, PRESIDENT, TAYCO DEVELOPMENTS, INC. AND DOUGLAS TAYLOR, VICE PRESIDENT

Mr. KELLEY. Thank you, Mr. Chairman.

I am accompanied by Mr. Brian O'Neill, who is the Vice President for Research of the Insurance Institute for Highway Safety.

We are appearing today at the subcommittee's invitation to present the results of recent Insurance Institute for Highway Safety research bearing on the adequacy, or more precisely, serious inadequacy, of present and prospective Federal standards to reduce the damageability of cars in very low-speed crashes.

The motoring public has come to expect its cars routinely to suffer hundreds and sometimes thousands of dollars in damage in the most minor sorts of collisions; indeed, that expectation has brought the term fender bender into the American language. Yet most of the damage is needless; it could and should be designed out of future cars, thus saving countless dollars otherwise spent on repair parts and labor, and countless hours of wasted time while cars are in the repair shop.

None of this comes as news, of course. During the past 8 years, hearings held by this subcommittee and the full House Interstate and Foreign Commerce Committee, two Senate committees, and the United States Department of Transportation have developed voluminous records making clear that:

1. Technology for developing effective damage-preventing bumper systems has long been available to car manufacturers, but still is being widely withheld from their customers.

2. The cost of parts needed to repair cars after minor crashes, parts whose damage-induced purchase also represents an inexcusable drain on shrinking natural resources, has soared in recent years.

3. DOT's present standard—FMVSS 215—to prevent damage to safety-related components of the car in very low-speed test crashes—5 miles per hour front and rear into barrier and 3 miles per hour corner impact with a test pendulum—has had insufficient effect in reducing the damageability of cars made since the standard went into effect on September 1, 1972. Originally the compliance test was even weaker; the rear-end test speed was only 2.5 miles per hour.

4. There is still not in effect a DOT standard, as mandated by title I of the Motor Vehicle Information and Cost Savings Act of 1972, to reduce property damage in front and rear low-speed crashes. After repeated postponements at the request of auto manufacturers, DOT in February 1976 finally announced that such a standard would take effect in two stages, in the 1979 and 1980 model years.

The first stage would require bumpers that prevent damage in specified low-speed impacts, except damage to the bumper itself, one of the so-called crash parts that is most costly for consumers to replace. Some cars tested by us were meeting the first-stage requirements as long ago as 1975. The second stage would preclude virtually all damage, icluding to the bumper, in such impacts. At least one manufacturer, Volvo, is certifying its cars as already meeting the second-stage requirements.

The announced test procedures were no different than the extremely weak ones now applied for FMVSS 215, and the lead time to the effective date of the second stage, if counted from passage of the 1972 act, would total 7 years.

Most recently, DOT has again indicated the possibility of further delay; it has issued a proposal to defer the second stage of its title I standard for yet an additional year, that is, until the 1981 model year. It did this at the request of two automobile manufacturers who alleged in petitions that the 1979 model year effective date for the second-stage requirements is only one year later than that of the first-stage requirements, thus providing what they called insufficient lead time. The petitions for yet another postponement were written 4 years after passage of the 1972 act, with its clear intent of reducing wasteful, avoidable property damage as spelled out in title I.

With this testimony we are providing for inclusion in the record on this hearing a copy of our response to DOT's present proposal (Docket NOs. 74-11 and 73-19, Notices 13 and 10), to delay the second-stage requirements until the 1981 model year.

Meanwhile, in the real world, new-car bumper designs reflecting backward technology continue to flout the public-interest goal of the 1972 act, which was to substantially reduce built-in low-speed impact damage, the kind that does, but need not, occur in parking lots, driveways and city streets all across the country, millions of times a year, and thereby to ease the consequent economic burden on consumers, insurers, and the Nation generally.

As I said a moment ago, FMVSS 215, the present safety low-speed damage standard, did bring about some reductions in damage sustained by cars that we have impact-tested since the standard took effect in 1972. FMVSS is a performance standard, as would be a DOT standard responsive to title I of the 1972 act; this means that in meeting it, manufacturers may choose bumper designs of any sort, including those that are unnecessarily heavy, costly to repair and replace, and marginally effective, so long as they comply with the standard's very modest impact test requirements.

As our past testimony to DOT and this subcommittee has shown, FMVSS 215 has too often been met with bumpers that are in fact needlessly heavy, needlessly expensive to repair and replace, and needlessly ineffective in crashes that differ even slightly in type or speed from those specified in DOT's weak comliance tests.

The public has been misled to believe that such bumper designs are compelled by the Federal standard rather than by manufacturer decision, just as it was misled to believe that the unpopular ignition interlock safety belt use system was developed and pushed at Government initiative, when the truth was that the ignition

interlock was developed and pushed by auto company interests, over the objections and better judgment of the responsible Government agency.

I note the comments in 1974 on the floor of the House of Representatives by Chairman Moss of a companion subcommittee to that effect.

"Mr. Moss. Mr. Chairman, I would like to make a correction in the statement of my good friend, the gentleman from California, Mr. Rousselot, who implied that this was some bureaucratic conspiracy which brought about the interlock. The interlock was brought about ver the objections of the Department of Transportation as a result of the visit of the presidents of two of the major manufacturers of automobiles with the President of the United States, and at a subsequent meeting attended by Mr. John Ehrlichman, Mr. Peter Flanagan, and another White House aide, the order was issued to the Department of Transportation to go along with the interlock rather than the alternative system which the Department of Transportation had under study as an intermediate device. Now, Mr. Chairman, that is the fact." (The Honorable John E. Moss of California, Congressioal Record - House, H8136, August 12, 1974) Congress repealed the interlock standard in 1974.

For some years the Institute has been crash testing new cars to determine their low-speed impact performance. Most recently we looked at a number of 1977 model domestic and foreign cars in very low-speed impact situations and found, to put it bluntly, a pattern of designed-in damageability that mocks the spirit not only of the 1972 act's property damage reduction goals but also the human protection goals of the National Traffic and Motor Vehicle Safety Act of 1966.

Today we will show you, first, excerpts from films of our tests. The complete damage results are attached as an appendix. As these excerpts will show:

The present FMVSS 215 requirement has somewhat improved the ability of new cars to resist override and damage in very low-speed front-to-rear crashes, but much more improvement is needed and possible.

In very minor corner impacts of the kind not covered by DOT's compliance tests for FMVSS 215 and for its prospective title I standard, current-model car designs invite substantial amounts of needless damage.

The films will show the 1977 Chevrolet Impala, highly touted by General Motors as more efficient in its use of this earth's space and materials than full-sized cars of the past, is susceptible to damage of a kind never before seen in our corner-impact crash test program.

Finally, in frontal crases as low as 10 miles per hour into a wall, actually a test barrier, some new-car designs are permitting doors to jam closed in the event of fire or other injury-threatening emergency.

[Begin Film of 1977 Crash Tests:]

First, we are looking at the series of 1977 model cars in our low speed crash tests [see p. 36]. We are looking at a sampling of those tests because we have too many to show you all of them on film today, and we are looking first at the front to rear tests with

bumpers that meet the present so-called safety standards—FMVSS 215—of DOT.

While these bumpers are doing a somewhat better job than those we had looked at prior to the Federal standards coming into being in 1972, still as we see in this example, the 1977 Ford Pinto, much needless damage is being generated by their design.

There we saw $353 worth of the damage between the two cars.

Even more costly damage resulted because of the design of the Chevrolet Vega in this 10 mile an hour front to rear impact.

I stress that these cars do meet the minimum requirements of the present safety standard in that they protect so-called safety related components of the car in 5 mile an hour barrier tests and 3 mile an hour corner impact pendulum tests. Yet they allow these many hundreds of dollars worth of the cosmetic damage and in this case, as we will see in a moment, the additional damage and inconvenience and perhaps hazard of being unable to open the trunk following this very, very minor impact. If one's flares and other emergency equipment were in that trunk, the outcome is obvious.

One of the highest damage cars in the front to rear impact tests series that we have performed this year was the newly designed 1977 Chevrolet Impala with $440 worth of damage to the two cars.

Here we see again to the bumper itself and to some of the cosmetics, why that has happened.

Finally, the worst performer in this test and one that did manage to produce override, even in this modest impact, with as you see resulting damage to the impacting car—close to $600 worth of waste—the 1977 Plymouth Gran Fury. Yet these cars do meet the present Federal safety bumper standard.

In our 5 mile hour front into angle barrier tests, we will show you now the five worst performers in the series, starting with the fifth from the worst, and going on to the worst. We are looking first at the 1977 Ford Granada, which in this very modest impact managed to incur $256 worth of damage to itself.

Another Ford product, the Ford LTD, a larger car, was even more with $318 worth of designed-in damage.

These cars, I repeat and stress, do pass the present Federal standard.

Here, in just a 5 mile an hour corner impact, there had been sufficient damage to make it very difficult to open the door.

Mr. ECKHARDT. In the last one, the bumper itself causes a great deal of damage.

Mr. KELLEY. You are aboslutely correct, the bumper itself is an agent of damage rather than a protector of the car from damage. Here it has done exactly as you describe, it has damaged the sheet metal on the car because of its placement and because of the insufficiency of the shock mount itself.

That is equally true of the 1977 Toyota Corolla, a small car, and yet its repair bill was not small after its 5 mile an hour corner tap into the wall, close to $400, and here is the worst of all of those cars we tested in the 5 mile per hour corner series, the 1977 Datsun, this model, the B210, with more than $430 of damage and again, the bumper itself was an agent of damage to the car and also a victim, if you would, of damage because of its own design.

This is a 10 mile an hour front into angle barrier test, a series we began last year, and it produced even larger amounts of damage—and we are talking of damage now that gets up close to $1,000 per impact, even at 10 miles an hour, the speed at which those of us who are joggers jog routinely yet do not incur that kind of damage if we are unfortunate enough to bump into a wall.

Here again a jammed door, and we begin seeing a pattern of jammed doors, sealing the escape route for occupants in case of an emergency such as fire or need for quick medical care.

The Datsun is doing very badly here, too, with more than $600 worth of damage and its completely destroyed cosmetic corner, with the bumper again doing no good and a good deal of harm.

With the 1977 Ford LTD II, a larger car with close to $850 worth of damage, the pattern becomes clear. A much smaller car, the 1977 Volkswagen Rabbit, yet an even greater amount of damage. We have seen cars of all sizes in these worst performing entries in the 10 mile an hour angle barrier crash tests series.

The Rabbit, again, had a door that was jammed following this crash, making escape, particularly for an injured person or frightened person, very, very difficult. The worst performing of every car we tested this year in this 10 mile an hour front into angle barrier series was the 1977 Chevrolet Impala—the car General Motors claims makes more efficient use of space and materials—with well in excess of $900 worth of the cosmetic damage because its bumper was so designed that it performed that way.

Another interesting thing and a frightening thing, frankly, happened in this test, and I would like you to watch very, very closely now, not the front of the car where one would expect damage in such a tap into a wall, but the roof of the 1977 Chevrolet Impala, which is just now beginning to crumple. The damage has carried all the way back to above the pillar of that car, and that is the design that is now being offered to Americans as a new entry in the markertplace.

Here is the 1977 Ford LTD, one of those that experienced door jamming at 10 miles an hour front into barrier impact, where the force is spread across the entire front of the care very modest impact, and in the front impact alone we saw close to $700 worth of damage.

Jammed doors have two results, as we will see in a moment, and in this car both doors were jammed.

One result is that the occupant cannot get out without a great deal of trying, and I was doing my best to get that door open, and having, I must say, a terribly difficult time when I did it. The other result is the cost of opening the door. Here, for the right front door, it cost us close to $130 in addition to the $686 that already had been incurred.

My colleague, Jane Bergler, attempted to get this door open and could not get it open far enough to leave the car. We tried—we are showing you just a glimpse of her very valiant efforts to get out—and finally I had to go and help her by pulling the door open at the great cost on this side of $164.30.

The jammed doors don't need to happen and the little clip of film I am going to show you in just a moment will make that clear.

Mr. Chairman, something is terribly wrong with car designs so flimsy they permit doors to jam in frontal impacts as low as 10 miles per hour, and in one case you saw 5 miles per hour. That such designs are entirely unjustified is clear from this short sequence.

We would like to show you now—this was for air-bag testing, but here is a byproduct I think you will find relevant in connection with the door jamming we saw just a moment ago—we are going to look at a Volvo impacting a wall, in this case this is Volvo at 35 miles per hour.

I urge that you not be too distracted by the mayhem that is going on inside this car, which is not equipped with an air-bag. The companion car was, and the dummies did very nicely. But I urge you to look at the doors which in a moment we will open, just after the crash.

That is the driver side, after a 35 mile an hour impact, and that is the rear door. Those doors did not jam in a way, indeed, they did not jam at all. They certainly did not prevent escape for the occupants of those crashes.

As I point out, those are 1975 model cars, not 1977 model cars. In that impact of a 1975 Volvo sedan at 35 miles per hour into a barrier, those doors did not jam; we were able to open both of them following the crash. Yet the doors on some new cars on the market today cannot do as well even at 10 miles per hour, nor are they so required by Federal safety standards.

There is no Federal standard now governing the opening of doors in emergency situations under post crash circumstances.

As we showed you a moment ago, the new cars we tested are so designed that they incur many hundreds of dollars worth of repair requiring damage in bumps as low as 5 miles per hour corner-into-barrier. Yet designs have been available for years to totally eliminate such damage.

In 1971, in testimony before the Senate Antitrust and Monopoly Subcommittee, the president of a leading manufacturer of shock absorbing devices disclosed that his company was ready and willing to produce and sell to auto manufacturers high performance, low cost bumper mounts that would substantially exceed existing Federal compliance test requirements; 10 weeks ago, after analyzing the results of our 5-mile per hour corner impacts of 1977 models, we got in touch with that company, Tayco Developments, Inc., to ask whether it could develop—using its long available technology—a prototype bumper with the same general characteristics as a standard bumper, but with the ability to prevent damage to itself and its car in such impacts.

The film you are about to see shows the result of that inquiry. First you will see our 5-mile per hour corner impact of a 1977 Gremlin with its standard bumper. Then you will see another 1977 Gremlin in a 5-mile-per-hour corner impact test, this time equipped with the bumper prototype developed by Tayco Developments, Inc., in less than 8 weeks.

Finally you will see the latter car in a front-into-barrier test that substantially exceeds the present as well as prospective Federal low-speed impact standards.

May we have the final film, please?

After the title we will be looking at a 1977 Gremlin, in a 5-mile-per-hour corner barrier impact, equipped with its own standard bumper as it came when we purchased it from the dealer all our test cars are purchased from dealers.

This car, which performed comparatively well—if you will recall some of the dollar figures in our other tests, it was not much better or worse than any other at its repair cost of a little less than $250 for the impact—was not untypical of the results in standard automobiles in 5 mile an hour impacts.

The damage was cosmetic, and also to the bumper itself. That is the post crash car, you see the crinkling of the sheet metal and crinkling of the bumper itself.

Now we will look at another Gremlin, an identical Gremlin, but modified with the Tayco developments bumper. That is the Tayco developments bumper, made at our request under very severe time constraints, I must say, shortly after they were asked to do this work.

You are seeing in this film Mr. Paul Taylor, who is the president of the company and himself an engineer, in the foreground doing the last of the installation of the bumper, and following this they did some more bolting on of things.

Mr. ECKHARDT. Is that really all the time it takes?

Mr. KELLEY. No, sir; we are just looking at one of the sequences; they did a great deal more than that. I was simply trying to give you a look at the bumper itself.

Here is that bumper on that same car in a 5-mile-per-hour corner impact such as one might get into with a low retaining wall in a parking lot or wherever—not much of an impact, although it's $200 or $300 worth of damage on today's marketplace car—and here it was no damage at all. Independent appraisers, incidentally, did the appraising of the results of the test, and found no damage whatsoever in this impact not one penny's worth.

There is the post crash car compared to the standard Gremlin, the Gremlin with the standard bumper, following the impact.

We wanted then to see and assure ourselves that the Tayco bumper would perform as well in a front into barrier 5-mile-per-hour test; but we decided to be just a little tougher on it than we had been on marketplace cars, and so we upped the speed to 7 miles an hour, which is considerably tougher in physics, incidentally, than 5 miles per hour.

Again, we had no damage at all. I might point out that the bumper you are seeing had previously been impacted on Mr. Taylor's own car, the one that is at the hearing today outside the hearing room. It had been put through other tests and so these were not the first impacts it had withstood. It will do that over and over again.

Paul and Douglas Taylor, whose company developed the prototype bumper shown in the film, are here and available to answer questions about their work should you have any.

Mr. Chairman, the history of the 1972 act, as well as the DOT's own interpretation of the act's purposes, makes clear that the elimination of damage at such very low speed bumps as those represented by DOT's compliance tests—5 miles an hour front and

rear into barrier and 3 miles an hour pendulum into corner—was seen as only the first in a series of standards-making steps that ultimately would substantially reduce designed-in crash damage in front and rear impacts at higher speeds and across a wide range of crash types.

As of today, none of these steps has been taken, not even the first one of putting in place a firm effective date for the title I standard to eliminate damage in such compliance tests. So, the waste goes on.

Thank you.

[Mr. Kelley's prepared statement and appendixes follow:]

FOR RELEASE UPON DELIVERY -- EXPECTED 10:00 AM, FRIDAY 4/4/75

STATEMENT OF ALBERT BENJAMIN KELLEY
SENIOR VICE PRESIDENT
INSURANCE INSTITUTE FOR HIGHWAY SAFETY

BEFORE THE
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PUBLIC MEETING
DOCKET NO. 74-11, NOTICE 7; DOCKET NO. 73-19, NOTICE 6
BUMPER STANDARD

April 4, 1975

I am appearing today to describe Insurance Institute for Highway Safety research results that bear on NHTSA's proposed bumper standard under Title I of the Motor Vehicle Information and Cost Savings Act of 1972.

The Institute is an independent, nonprofit scientific and educational organization dedicated to reducing the losses -- deaths, injuries and property damage--resulting from crashes on the nation's highways. We are supported, indirectly or directly, by insurance companies writing the bulk of auto coverage in the United States. Since 1969 we have been

conducting collision testing and other research involving a wide range of pre-crash, crash and post-crash factors that contribute to the huge amounts of unnecessary death, injury and property loss on the nation's highways.

Under Title I of the Motor Vehicle Information and Cost Savings Act, the Department of Transportation is required to establish a bumper standard that will reduce property damage in low-speed automobile impacts. The Act became law two and one half years ago. But even as of today, no such standard yet has been introduced.

In the most recent in its two-year series of proposals for such a standard, the National Highway Traffic Safety Administration suggests that a Title I property damage requirement for new-car bumpers will take effect no earlier than the 1977 model year, and possibly as far off in the future as the 1979 model year.[1] This contrasts with NHTSA's original plan of an effective date of September 1, 1974, for a Title I requirement -- a date that, of course, has long since passed.[2]

The current NHTSA proposal would:

1. Combine the present Motor Vehicle Safety Standard No. 215, which requires that new cars be able to withstand damage to their safety-related components in very low-speed impacts, with the proposed requirements of the Title I property-damage bumper standard. In planning to merge these two requirements, the agency correctly recognizes that the technological ways

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1 NHTSA Docket No. 74-11, Notice 7; Docket No. 73-19, Notice 6, 40 Federal Register 11598, published March 12, 1975.

2 NHTSA Docket No. 73-19, Notice 1; 38 Federal Register 20899, published August 3, 1973.

for protecting people and for protecting their property in lower-speed crashes are not only compatible, but usually inseparable.[1]

2. Establish, effective for the 1977 model year or later, a Title I bumper standard that would permit costly, needless damage to the entire bumper system under the specified impact tests. This represents a substantial backsliding from the agency's August 3, 1973, proposal -- which was that a barrier standard take effect for new cars of the 1975 model year and that an additional pendulum test requirement take effect a year later. That proposal allowed no safety or material damage of any kind, including to bumpers.

3. Establish, effective for the 1980 model year or later, a modified Title I bumper standard permitting, under the standard's impact tests, no damage to the car other than bumper face bar damage described as "no permanent deviation greater than three-eighths of an inch from its original contour."

In testimony on March 14 of this year, given at the request of the Senate Commerce Committee, we characterized the current proposal as a "technological anachronism." I am submitting a copy of that testimony for your record in these hearings. As you will see in a moment, the conclusion that the proposed, damage-permitting standard represents too little protection, effective later than necessary, is bolstered by the performance of new-car designs already available to consumers.

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[1] Statement of William Haddon, Jr. M.D., President, Insurance Institute for Highway Safety, before the U.S. Senate Committee on the Judiciary, Subcommittee on Antitrust and Monopoly Legislation, March 17, 1970.

As we pointed out in our testimony to the Senate committee, the NHTSA's "otherwise lucid notice of March 12," which contains the current proposal, is devoid of "any rationale whatsoever for this new plan to allow car designs that lead to costly destruction of bumper systems in 5 mile per hour parking lot or garage-door taps, with all of the consequent economic burden and bother."

It is understandable that the notice offers no justification for the weakened proposal; there is no justification. Quite to the contrary, as we told the Senate committee, the evidence is that "the state of auto design art is, and has been for some time, easily able to meet the five mile per hour barrier impact test requirements of the newly-proposed, off-in-the-future standard."

This should come as no surprise, incidentally, to NHTSA. Some twenty months ago the agency was aware, as a matter of record, that its then-proposed bumper standard for 1975 model cars was already an anachronism. According to a memorandum in its docket dated August 17, 1973 and signed by the director of NHTSA's engineering systems staff, the agency had learned from domestic and foreign "manufacturers' comments" that, "Most 1974 model vehicles will meet FMVSS 215 requirements and most of Title I Bumper Standard NPRM Docket 73-19; 5/5 no damage barrier requirements." [1] (Emphasis added.)

We will look now at a set of 5 mile per hour front and rear barrier crash tests of 1974 and 1975 model cars. These tests, shown at the Senate Committee hearings, were part of the low-speed impact research program conducted by the Institute since 1969; results of tests involving earlier

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[1] ESS Meetings with Big-4 and Foreign Manufacturers Concerning Providing Implementation Costs and Consumer Damage Savings Impacts Concerning Title I PL 92-513 Bumper Standard NPRM Docket 73-19. (Memo to The Record from Director, Engineering Systems Staff, NHTSA, dated August 17, 1973.)

model years have been made available to NHTSA in previous docket filings by the Institute. The tests we are about to see are drawn from the larger presentation of filmed crash test research results presented at your February 18, 1975 hearing.[1] (Test and repair cost estimate procedures for these tests, together with repair cost estimates for all tests conducted in the 1975-model car test series, are shown in our testimony of March 14 before the Senate Commerce Committee hearing, which is being made a part of this hearing record.)

The tests we will see now are of bumper performance, on 1974 and 1975 model cars, that meets the 5 mile per hour barrier test not only of the existing DOT safety bumper standard, but also of DOT's proposed "1977-model-year-or-later," Title I property-damage standard, which permits bumper damage.

(FILM BEGINS HERE)

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[1] Statement of William Haddon, Jr., M.D., President, Insurance Institute for Highway Safety, at the National Highway Traffic Safety Administration Public Meeting on a Proposed Bumper Standard, February 18, 1975.

FILM

Section I: 5 MPH Front Into Barrier

1974 Ford Pinto	$4.00
1975 Ford LTD	$4.50
1975 Ford Pinto	$4.50
1975 Chevrolet Impala	$5.40
1974 Chevrolet Vega	$70.40

Section II: 5 MPH Rear Into Barrier

1975 Chevrolet Impala	$0.00
1975 Ford LTD	$0.00
1975 Ford Pinto	$0.00
1975 AMC Gremlin	$0.00
1975 Datsun 610 (lightweight bumper)[1]	$0.00

[1]"lightweight bumper" refers to systems weighing less than four per cent of the vehicle's total curb weight.

FILM

Section III: 5 MPH Front, Rear Into Barrier

1974 Chevrolet Impala	$0.00
1974 AMC Gremlin	$0.00
1974 Datsun 610 (lightweight bumper)[1]	$0.00
1975 AMC Gremlin	$4.50
1975 Datsun 610 (lightweight bumper)[1]	$7.20
1975 Toyota Corolla (lightweight bumper)[1]	$26.70
1975 VW La Grande (lightweight bumper)[1]	$122.45
1975 Chevrolet Vega	$142.66

[END FILM HERE]

[1]"lightweight bumper" refers to systems weighing less than four per cent of the vehicle's total curb weight.

In sum, these test results demonstrate that some current model cars are so designed that they now meet the barrier test criterion of the proposed, 1977-or-later bumper standard, yet in some cases still sustain pocket-picking, avoidable damage. The test results further demonstrate that some current model cars can even meet the barrier test criterion of the 1980-or-later standard, which forbids most bumper damage.

How well do the bumpers on these same cars perform when tested both in pendulum and barrier impacts, as specified in the proposed Title I property-damage bumper standard? Such information is an essential baseline from which to develop bumper performance requirements that do more than simply put NHTSA's belated stamp of approval on what already has been substantially accomplished in the design of real-world, on-the-road automobiles.

To find out how currently-available new cars may perform under the proposed, damage-permitting Title I bumper standard, the Institute completed, literally hours ago, a series of pendulum and barrier impact tests on eight 1975-model automobiles -- eight of the same make and model as those shown to the Senate hearing of March 14 and, earlier today, to this hearing. The test procedure for each car, in the following order, was: left front corner pendulum (high), left rear corner pendulum (high), right front corner pendulum (low), right rear corner pendulum (low), front left offset pendulum (low), rear left offset pendulum (low), front centerline pendulum (high), rear centerline pendulum (high), front barrier and rear barrier.[1]

The cars you will see tested, in order of appearance, are the 1975 VW La Grande, 1975 Toyota Corolla, 1975 Chevrolet Impala, 1975 Ford Pinto,

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[1] The test procedure is described in detail in Appendix A.

1975 Ford LTD, 1975 Datsun 610, and Chevrolet Vega. (Films of the 1975 AMC Gremlin's test were processed too late for this hearing but will be transmitted to the docket later.)

(FILM BEGINS HERE)

Section IV

1975 VW LA GRANDE

TOTAL ESTIMATED
REPAIR DAMAGE: $95.05

This La Grande is seen in each of the full range of pendulum and barrier tests -- the four corner pendulum impacts, the four longitudinal pendulum impacts and the two barrier impacts. (In the interest of time, we will show excerpts of pendulum tests conducted on the other vehicles.) The VW's front bumper is so designed that the face bar experienced no damage in the tests. The dust cover from the front bumper's right energy absorber fell off, but was not damaged. The rear bumper, seen here, was slightly dimpled. Total estimated repair cost for this bumper-only damage: $95.05

1975 TOYOTA COROLLA

TOTAL ESTIMATED
REPAIR DAMAGE: $108.48

The Toyota's estimated damage repair cost of $108.48 was entirely to the bumper system and components. The front and rear bumpers required realignment, and the rear bumper face bar had to be replaced. Other than to the bumper, no damage occurred.

1975 CHEVROLET IMPALA

TOTAL ESTIMATED
REPAIR DAMAGE: $195.55

Bumper face bar dimpling accounted for most of the Impala's repair cost estimate of $195.55. Here, the rear bumper filler panel is seen after having been displaced in the tests. It was repositioned, without damage, literally by a flick of the wrist.

1975 FORD PINTO

TOTAL ESTIMATED
REPAIR DAMAGE: $212.25

The Pinto's non-bumper damage was minor -- a paint scratch on the right rear fender, repairable for $8.50.

Bumper damage, some of it seen here, accounted for almost all of this car's $212 in estimated repair cost.

1975 FORD LTD

TOTAL ESTIMATED
REPAIR DAMAGE: $222.70

All of the LTD's estimated repair cost of $222 involved damage to bumper face bars and guards.

These dimples on the front and rear bumpers tell much of the story.

1975 DATSUN 610

TOTAL ESTIMATED
REPAIR DAMAGE: $257.54

Other than a tiny paint scratch, the Datsun's estimated damage cost of $257 was entirely due to bumper-related damage. Front and rear bumper guards sprung their damage-inviting chrome inlays...a dent in the right rear bumper...and, the $8.50 paint scratch on the left front fender.

1975 CHEVROLET VEGA

TOTAL ESTIMATED
REPAIR DAMAGE: $371.38

The Vega's bumper bace bar deformation and energy absorber damage, along with $125.15 in damage to the front grill, trunk floor and other non-bumper parts, added up to a total of $371 in estimated damage.

(FILM ENDS HERE)

Also included in our test series was the 1975 AMC Gremlin, films of which are still being processed. The Gremlin's only non-bumper damage was a scratch to its right rear fender, with an estimated repair cost of $8.50. The remaining $234 of the Gremlin's damage was accounted for by damage to the bumper face and reinforcement bars and to the bumper absorber cover.

(A detailed report of each of the above tests will be submitted to the docket, together with a print of the film shown here and film of the Gremlin impact tests.)

A breakdown of damage in each of the tests described above is shown in Appendix B. Appendix C shows the estimated repair costs associated with that damage, also on a car-by-car basis.

In Appendix C is shown the estimated damage repair cost, car by car, resulting from bumper damage -- the kind permitted by NHTSA's proposed Title I property damage standard -- contrasted with that for non-bumper damage. As the chart shows:

-- Nearly $200 in estimated repair costs per car, on average, resulted from bumper damage of the sort that would continue to be allowed by the proposed standard until the 1980 model year. The bumper damage ran from a high of $249 for the Datsun to a low of $95 for the VW.

-- No more than about $20 in estimated repair costs per car, on average, involved non-bumper damage that would be prevented by the standard. The non-bumper damage ran from a high of $125.15 for the Chevrolet Vega to a low of zero dollars for four of the eight tested cars.[1]

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[1] (Without the Vega, with its exceptionally great amount of non-bumper repair cost, the average would drop to less than $4 per car.)

In our tests, each vehicle was subjected to the full range of pendulum and barrier impacts indicated in the proposed "1977-or-later" standard. If the test results are an indication of the proposed standard's contribution to low-speed crash protection -- protection for consumers, that is, against needless, pocket-picking repair bills in minor impacts -- the proposal is worse than a technological anachronism. It is a retreat that would allow costly, avoidable bumper damage in very low-speed impacts for another four model years. Even after that, the proposed 1980 model year version of the standard -- which might be a modest step forward were it to take effect sooner -- will continue to permit some bumper damage.

Turning to another issue raised at the Senate hearings of March 14: Although the present safety bumper standard (FMVSS 215) has been accompanied by some reduction in underride-override in our 10 mile per hour front to rear impact tests, the problem continues to crop up on cars that meet the standard's criteria, with unfortunate and costly repair consequences for the owners. The following film of Institute two-car crash test research illustrates the point.

(FILM BEGINS HERE)

Section V: 10 MPH Front to Rear Impacts Exhibiting Override-Underride Characteristics

1974 Plymouth Fury III	$325.89
1975 Ford Pinto	$327.70

1975 Chevrolet Impala	$339.49
1975 Plymouth Gran Fury	$375.11

(FILM ENDS HERE)

In passing, as we noted at the Senate hearing, it is interesting that a senior official of the company that manufactures the Plymouth sedans that did so poorly in those impacts -- impacts between identical cars of the same make -- told the recent NHTSA bumper standard hearing, "To us, the most important aspect of good bumpers has always been to make sure that bumpers meet each other, and the new pendulum impacts brought in in 1974, and in effect for 1975, ensure that bumpers are substantially the same height."[1] That the pendulum impacts don't always ensure against override-underride is evident from the film we have just seen.

CONCLUSION

As our tests indicate, existing cars already are substantially able to meet the terms of NHTSA's proposed bumper standard that won't take effect until 1977 at earliest. If the agency holds to its present timetable, the public will not begin until the 1980 model year at earliest to realize any of the additional bumper protection benefits envisioned by Title I when the Congress passed it two and one half years ago. NHTSA's currently proposed standard thus represents not an advance, but a retreat. The public deserves better.

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[1] Statement of Sidney Terry, Chrysler Corporation, before the February 18 hearing, following testimony of William Haddon, Jr., M.D.

APPENDIX A

Test Procedures

INTRODUCTION

The test vehicles were subjected to low speed front and rear pendulum and barrier impacts in accordance with the March 7, 1975 proposed Part 581 Bumper Standard of Title I of the Motor Vehicle Information and Cost Savings Act of 1972. The test requirements applied were those proposed for passenger cars manufactured after August 31, 1976. The vehicles were evaluated against the present and future safety and damage criteria of Part 581 Bumper Standard. Each vehicle was examined by three damage appraisers following the test sequence, and a damage estimate was prepared.

PROCUREMENT

New, 1975 model year vehicles were purchased from manufacturer authorized retail dealers and transported to the test facility. No vehicle had been driven more than 30 miles.

TEST PROCEDURES

Detailed inspections were performed before and after the test sequence on each vehicle including all items covered in the proposed Part 581 Bumper Standard. Measurements of the bumper system were made before and after the test sequence. Before and after each impact, visual inspections of the bumper systems, and additional

contour measurements of the bumper were performed. Pre-test preparation included draining gasoline from the fuel tank, disconnecting the fuel line at the fuel pump inlet, and installing a small auxiliary fuel tank to the pump inlet. The vehicle fuel tank was then filled with Stoddard fluid. Brakes were not applied during the impacts. The vehicle transmissions were in neutral. For the barrier impacts, the vehicle engine was idling.

TEST SEQUENCE AND SPECIFICATIONS

The test sequence, with specifications, was performed on each vehicle in accordance with Table I.

DAMAGE APPRAISAL

Following the test sequence, each vehicle was examined by a panel of three independent professional damage appraisers. Cost-to-repair estimates were prepared using the current part prices from Motor Crash Estimate Guide, and for imported automobiles, from authorized dealers, and a labor rate of $9.00 per hour.

TABLE I

Impact Number	Test Type	Location	Height	Speed
1	Pendulum	Left front corner*	19.9-20.0 in.	2.8-2.95 mph
2	Pendulum	Left rear corner	19.9-20.0 in.	2.8-2.95 mph
3	Pendulum	Right front corner	16.1-16.2 in.	2.8-2.95 mph
4	Pendulum	Right rear corner	16.1-16.2 in.	2.8-2.95 mph
5	Pendulum	Front midway between center-line and left corner	16.1-16.2 in.	4.8-4.95 mph
6	Pendulum	Rear midway between center-line and left corner	16.1-16.2 in.	4.8-4.95 mph
7	Pendulum	Front-center-line	19.9-20.0 in.	4.8-4.95 mph
8	Pendulum	Rear center-line	19.9-20.0 in.	4.8-4.95 mph
9	Barrier	Front	--	4.8-4.95 mph
10	Barrier	Rear	--	4.8-4.95 mph

*Corner is specified as the corner location where plane A of the test device forms an angle of 60° with a vertical longitudinal plane.

APPENDIX B

INSURANCE INSTITUTE FOR HIGHWAY SAFETY
PENDULUM AND BARRIER IMPACT TESTS
DESCRIPTION OF DAMAGE – 1975 MODELS

		Bumper System Damage		Non-Bumper Damage
		Face Bar, Attachment Components and Fasteners[1]	Other[2]	
VW LaGrande	Front	Right front energy absorber rear dust seal displaced	None	None
	Rear	Face bar dimpled and misaligned	None	None
Toyota Corolla	Front	Face bar misaligned Bumper guard deformed	None	None
	Rear	Face bar deformed and misaligned Bumper guards deformed	None	None
Chevrolet Impala	Front	Face bar dimpled	Filler panel displaced	None
	Rear	Face bar dimpled	Filler panel displaced and scratched	None
Ford Pinto	Front	Face bar deformed and misaligned License bracket deformed	Filler panel displaced	None
	Rear	Face bar deformed and misaligned	None	Right fender scratched
Ford LTD	Front	Face bar dimpled and misaligned Bumper guard deformed	Filler panel displaced	None
	Rear	Face bar deformed and misaligned Bumper guard deformed	None	None
AMC Gremlin	Front	Face bar deformed and misaligned, loose absorber cover, rear	None	None
	Rear	Face bar deformed and misaligned	None	Right fender scratched
Datsun 610	Front	Face bar deformed and misaligned Bumper guard deformed	None	Left fender scratched
	Rear	Face bar deformed and misaligned Bumper guard deformed	None	None
Chevrolet Vega	Front	Face bar deformed and scratched Back bar deformed License bracket deformed	Filler panel damaged	Frame deformed Grille deformed Right fender scratched
	Rear	Face bar deformed and scratched Energy absorbers deformed	None	Trunk floor deformed Right fender scratched

1 Under S5.3.8 of proposed amendment to 49 CFP parts 571, 581 dated March 7, 1975, damage would be permitted "to the bumper face bar and the components and fasteners that directly attach the bumper face bar to the chassis frame."

2 Includes items such as filler panels, etc.

IIHS, April 1975

APPENDIX C

INSURANCE INSTITUTE FOR HIGHWAY SAFETY
PENDULUM AND BARRIER IMPACT TESTS
REPAIR RESIMATES – 1975 MODELS

		Bumper System Damage			
		Face Bar, Attachment Components and Fasteners[1]	Other[2]	Non-Bumper Damage	Total
VW LaGrande	Front	$ 2.70	0	0	$ 2.70
	Rear	92.35	0	0	92.35
	Combined	95.05			95.05
Toyota Corolla	Front	21.65	0	0	21.65
	Rear	86.83	0	0	86.83
	Combined	108.48			108.48
Chevrolet Impala	Front	93.10	N.C.[3]	0	93.10
	Rear	102.45	N.C.[3]	0	102.45
	Combined	195.55			195.55
Ford Pinto	Front	105.60	N.C.[3]	0	105.60
	Rear	98.15	0	8.50	106.65
	Combined	203.75		8.50	212.25
Ford LTD	Front	103.90	N.C.[3]	0	103.90
	Rear	118.80	0	0	118.80
	Combined	222.70			222.70
AMC Gremlin	Front	110.23	0	0	110.23
	Rear	123.99	0	8.50	132.49
	Combined	234.22		8.50	242.72
Datsun 610	Front	123.50	N.C.[3]	8.50	132.00
	Rear	125.54	0	0	125.54
	Combined	249.04		8.50	257.54
Chevrolet Vega	Front	104.05	14.78	75.05	193.88
	Rear	127.40	0	50.10	177.50
	Combined	231.45	14.78	125.15	371.38
Average	Front	83.09	1.85	10.44	95.38
	Rear	109.44	0	8.39	117.83
	Combined	192.53	1.85	18.83	213.21

1 Under S5.3.8 of proposed amendment to 49 CFP parts 571, 581 dated March 7, 1975, damage would be permitted "to the bumper face bar and the components and fasteners that directly attach the bumper face bar to the chassis frame."

2 Includes items such as filler panels, etc.

3 Minor repositioning that could be accomplished by damage estimator during appraisal.

IIHS, April 1975

Low Speed Crash Tests: 1977 Model Cars

10 MPH Front into Rear Tests

1977 Ford Pinto	$353.05	(both cars)
1977 Chevrolet Vega	$427.45	(both cars)
1977 Chevrolet Impala	$440.70	(both cars)
1977 Plymouth Gran Fury	$594.21	(both cars)

5 MPH Front into Angle Barrier Tests

1977 Ford Granada	$256.85
1977 Ford LTD	$318.45
1977 Plymouth Gran Fury	$359.40
1977 Toyota Corolla	$386.55
1977 Datsun B210	$436.86

10 MPH Front into Angle Barrier Tests

1977 Ford LTD	$804.71
1977 Datsun B210	$823.58
1977 Ford LTD II	$844.25
1977 VW Rabbit	$848.16
1977 Chevrolet Impala	$928.00

Jammed Doors: 1977 Ford LTD 10 MPH Front into Barrier Tests

$686.30	(front-end damage)
$128.40	(passenger door)
$164.30	(driver side door)

TEST PROGRAM 1977

MAY 3, 1977
IIHS

ESTIMATED COST TO REPAIR

	05 MPH FRONT TO ANGLE BARRIER	10 MPH FRONT TO ANGLE BARRIER	10 MPH FRONT TO BARRIER	10 MPH FRONT	10 MPH TO REAR	10 MPH BOTH
1977 PLYMOUTH GRAN FURY	359.40	720.76	438.50	445.58	148.63	594.21
1977 FORD LTD	318.45	804.71	686.30	16.40	260.10	276.50
1977 CHEVROLET IMPALA	237.30	928.00	---	163.00	277.70	440.70
1977 CHEVROLET CHEVELLE	97.70	726.80	---	115.90	238.45	354.35
1977 FORD LTD II	219.30	844.25	---	212.60	135.75	348.35
1977 CHEVROLET NOVA	233.70	668.50	---	139.40	128.60	268.00
1977 FORD GRANADA	256.85	659.55	---	137.60	179.95	317.55
1977 PLYMOUTH VOLARE	222.06	518.35	---	101.86	137.76	239.62
1977 CHEVROLET VEGA	122.40	791.93	544.35	170.50	256.95	427.45
1977 FORD PINTO	252.15	576.60	396.70	205.55	147.50	353.05
1977 AMC GREMLIN	236.20	675.76	540.30	98.45	97.35	195.80
1977 CHEVROLET CHEVETTE	176.55	552.45	---	95.05	95.05	190.10
1977 VW RABBIT	109.71	848.16	---	61.26	54.65	115.91
1977 DATSUN B210	436.86	823.58	---	72.12	72.15	144.27
1977 TOYOTA COROLLA	386.55	720.31	---	41.20	89.95	131.15
1976 HONDA CIVIC CVCC	223.50	457.70	---	2.20	2.20	4.40
AVERAGE	243.04	707.34	521.23	129.92	145.17	275.09

PRICES AS OF 1976
LABOR RATE $ 11.00
SUBLET RATE $ 4.00

INSURANCE INSTITUTE for HIGHWAY SAFETY

FOR RELEASE ON DELIVERY
ESTIMATED 2 P.M. EDT, MAY 6, 1977

CONTACT: LYNNE SMITH
PHONE: 202/333-0770

New-Car Bumpers Flout Intent Of '72 Law, IIHS Tests Show

Despite passage of a law five years ago to bring about more damage-resistant bumpers on new cars, 1977 model cars still have been designed so that they incur many hundreds of dollars worth of damage in corner bumps as low as five miles per hour, the Insurance Institute for Highway Safety told a House hearing today.

Testifying before the Subcommittee on Consumer Protection and Finance, the Institute presented the filmed results of its latest low-speed impact tests of current-model domestic and foreign cars, showing that:

o The present federal "safety" bumper standard "has somewhat improved the ability of new cars to resist override and damage in very low-speed front-to-rear crashes – but much more improvement is needed."

o "In very minor corner impacts [not now covered by the federal standard], current-model car designs invite substantial amounts of needless damage."

o The 1977 Chevrolet Impala, claimed by General Motors to have a "more efficient" design, "is susceptible to damage of a kind never before seen" in the Institute's corner-impact crash test program.

o "'In frontal crashes as low as 10 miles per hour into a wall, some new-car designs are permitting doors to jam closed," sealing occupants in the car and cutting off rapid escape in the event of fire or other emergency.

Benjamin Kelley, senior vice president of the Institute, told the subcommittee that "the technology for developing effective damage-preventing bumper systems has long been available to car manufacturers," but most are still withholding such improvements from their customers. He said that since passage of the Motor Vehicle Information and Cost Savings Act in 1972 – which contemplated what the chairman of the subcommittee has called "immediate" low-speed bumper protection – the auto companies have been able to stall federal deadlines for such systems until the 1980 model year.

Kelley noted that the Department of Transportation has now proposed, at the request of two car makers, yet another delay of the standard's effective date, to the 1981 model year.

The Institute also showed crash test film of a bumper designed by Tayco Developments, Inc., using long-available technology, that was able to prevent all damage to itself and the vehicle, not only in five miles per hour corner impact tests but also in seven miles per hour front-into-barrier tests conducted by the Institute.

A car equipped with the new bumper was available for viewing during and after the hearing.

(The full text of Kelley's statement is attached. Film of the IIHS crash tests is available from Lynne Smith at the hearing or at IIHS offices, Suite 300, Watergate Six Hundred, Washington, D.C. 20037, 202/333-0770.)

Mr. ECKHARDT. That last photograph there was an angle crash, too, wasn't it?

Mr. KELLEY. Mr. Chairman, the very final of those sequences was a front end to barrier flat crash.

Mr. ECKHARDT. How about the one before that?

Mr. KELLEY. That was an angle crash.

Mr. ECHKHARDT. That was at 5 miles per hour?

Mr. KELLEY. Yes, the last one was 7 miles an hour front end to flat barrier, and the second was 5 miles an hour front into corner barrier.

Mr. ECKHARDT. I recall when we had this bill up originally; it had been sent back to the subcommittee by the full committee, and I just wanted to demonstrate that some of the statements about the extra costs and weight were not true. We ultimately did get it out f the subcommitte and passed.

That was some 5 years ago, and at the time we had a bulldozer out here in the front of the building, and we drove an ordinarily equipped Saab automobile into the bulldozer, in a flat impact, with no damage. I suppose that probably wouldn't have taken an angle blow, that bumper on a Saab at that time at that speed, would it?

Mr. KELLEY. We have not tested a Saab so I hesitate to speculate.

Mr. ECKHARDT. That was the standard bumper at the time.

Mr. KELLEY. I understand, yes, sir. I hesitate to speculate on how it would have performed in a 5-mile an hour corner barrier impact, but I must tell you that not one car we have tested, whether foreign or domestic has performed without damage in that 5-mile an hour corner barrier impact test. As I said in my testimony, Volvo has been certifying that it at least meets all of the current Federal compliance tests, which include the 5-mile an hour flat barrier and 3-mile an hour corner swinging pendulum, with absolutely no damage of any kind, not only safety but no economic damage as well.

Mr. ECKHARDT. The existing corner standard is only 3 miles an hour?

Mr. KELLEY. That is correct yes, sir, and it is not with a barrier, it is with a rather strangely shaped pendulum that is intended to minimize the possibility of override and underride. But as you saw in the impact front to rear of the Plymouth car, the Chrysler product, it does not sufficiently minimize it, and we are still getting underride and override.

Mr. ECKHARDT. I think we will now take a brief recess and see the demonstration car, and meet back here immediately afterwards for questions.

[Brief recess.]

Mr. ECKHARDT. The subcommittee will be back in session.

During the period of time we were looking at the demonstration bumper, I was asked by one of the members of the media if we were going to ask the automakers why they were not utilizing the best technology to reduce repair costs?

We have notified the automakers and asked them if they would appear, or if they desired to appear, and it is my understanding that all have declined to appear.

A little further statement on that point will be made later, but I thought it only fair to let it be known on the record that that is my

understanding of the situation at this time. If I am incorrect in that understanding, I am sure there will be sufficient time to correct it before the end of these hearings.

Mr. Kelley, you stated that you tested cars in 1975 and found that some already met the phase 1 bumper standard requiring no damage to the automobile itself in a 5-mile per hour front and rear, 3-mile per hour corner bumps.

What percentage of the market did the complying cars represent at that time?

Mr. KELLEY. Mr. Chairman, our tests were run on a relatively small sample of cars in a relatively short period of time when the Department of Transportation was considering a proposed standard under title I. I would be reluctant to state it in terms of share of the market because I don't think our sample size was sufficient, but my recollection is that a number of the cars that we tested did manage to go through the 5-mile an hour barrier test and the 3-mile an hour corner impact pendulum test with absolutely no damage, and we would be happy to submit the list of cars to you for the record.

My recollection is about half of what we tested, and I think we tested seven or eight cars that did that.

Mr. ECKHARDT. Without objection, the record will be held open for such information [See p. 22].

Have you had any experience this year?

Mr. KELLEY. We did not this year run the 5-mile per hour front into barrier test series because we have found since the application of the so-called safety bumper standard, Federal Motor Vehicle Safety Standard 215, that new cars are doing generally much better in that test series. Manufacturers are of course certifying compliance with that standard, as they must under the law in order to sell cars in this country, and so we felt that it was not necessary and somewhat superfluous for us to continue that test series, and we have turned our resources to the corner tests that you have seen.

Mr. ECKHARDT. If the technology is widely available, why has NHTSA not required anyone to meet the standard earlier?

Mr. KELLEY. Mr. Chairman, I can't answer on behalf of the National Highway Traffic Safety Administration, but as an outsider looking at that agency, I have been saddened and puzzled by the pattern of delay, of foot-dragging, of refusal to implement the standard required by title I and strengthen the compliance test requirements of Federal Motor Vehicle Safety Standard 215. I can think of no legitimate excuse for the amount of delay that has taken place.

Mr. ECKHARDT. What arguments did the automakers make, if you know?

Mr. KELLEY. My recollection of the auto manufacturers' arguments is that they have argued, as they have time after time in safety standard proposal after safety standard proposal, that they needed many, many years of lead time to apply the most basic kinds of modern technology to their cars. They have said that in meeting performance standards, they would—and as a matter of discretion unhappily they can—choose designs that were needlessly costly, that were needlessly heavy that were needlessly inefficient, and

they have said that their customers did not want these kinds of improvements.

I hesitate to attempt to paraphrase the automobile industry's arguments because frankly I do not understand them at all.

Mr. ECKHARDT. It puzzles me too. I remember many, many years ago my family had, I think, a 1917 Franklin automobile, and I remember that even that early model had a rather rudimentary shock absorbing mechanism—a curved bar that could bend, and it stood out about 8 inches, I suppose, from the front of the car.

Well, from 1917 to within a few years ago, they managed to regress to the point where a bumper was virtually a piece of chromium plate on the frame of the car, so there certainly has not been any advancement toward efficient bumpers, or there was not, until the government began to take an interest in it. At least that has been my experience.

I don't know, does yours in any way vary with respect to that point?

Mr. KELLEY. I am afraid mine is precisely as you have described it, and the institute's precisely as you have described it, Mr. Chairman, and I find the NHTSA's failure to act even more puzzling, in light of the fact that within its own files and its own research films and results from test work done in connection with its research safety vehicle program, it has clear evidence of the ability to manufacture and design cars that can withstand impacts up to 7, 8 and 9 miles an hour front end into barriers, corner and head on, with no damage whatsoever. These are a matter of record within NHTSA, and I would hope that the agency will make that material available to the subcommittee.

Mr. ECKHARDT. One of the reasons for these oversight hearings is this: You know Congress is frequently charged with having done nonproductive things. At the time we passed this bill in 1972, we said that it would result in saving a billion or so dollars in automobile repairs. Of course the bill has not had that effect because it has not been implemented, and that is precisely the reason why we want to see why it wasn't implemented. In that period of time a very, very substantial amount of money has been, in my opinion, expended unnecessarily by the automobile-owning public.

Mr. KELLEY. My own observation, Mr. Chairman, not supported necessarily by statistics, but at least by personal experience, is that many, many people in this country think and have been led to believe that there already is in effect a Federal property damage bumper standard required by Congress, and that because of that standard, the public is being given inefficient, heavy, costly to buy, costly to repair, costly to replace bumpers. Somehow the notion has gotten abroad to the public and I know of no move by auto manufacturers to stop this notion, that it is the fault of law and the government that manufacturers are providing these atrocious bumpers, rather than the fault of manufacturers' design discretion.

Mr. ECKHARDT. As I recall it, about 1971 or 1972 the automakers were making precisely that argument, that there would be a substantial weight penalty as a result of any standard of the nature that we were then describing, and they even carried it so far as to

talk about a lesser fuel efficiency, which seemed to me to be utterly ridiculous.

Mr. KELLEY. Yet the fact of the matter is that today, while for some cars there is a substantial weight penalty, there is no standard yet that requires any improvement in bumpers, and so that is purely a matter of manufacturer discretion.

Mr. ECKHARDT. Are there some manufacturers who could not meet such standard without severe economic harm or loss of competitive position?

Mr. KELLEY. Not to my knowledge, Mr. Chairman.

Mr. ECKHARDT. Do any of the manufacturers beside Volvo survive a higher speed crashes without damage to the car?

Mr. KELLEY. We do not from our own testing experience know the answer to that question. I would hope that any manufacturer who could meet a higher standard would proclaim it loudly to the marketplace so that its customers would know and additional customers would come to purchase its automobile.

Mr. ECKHARDT. It would appear to be a very effective advertisement.

Mr. KELLEY. I would think so, yes, sir.

Mr. ECKHARDT. Would a high speed standard be feasible now in your opinion?

Mr. KELLEY. Yes, and has been feasible for some years.

Mr. ECKHARDT. What speeds do you think would be technologically feasible?

Mr. KELLEY. Based on our understanding of the technology, and the technology as it existed as long ago as 1969 and 1970, and as it was discussed in great detail before the Senate Commerce Committee and the Senate Antitrust and Monopoly Subcommittee at that time, there is no excuse, none whatsoever, for designs that permit any appreciable amount of damage in impacts up to 10 miles an hour front and front angle, rear and rear angle, or permit any damage whatsoever in the sorts of 10-mile an hour front-to-rear impacts that we saw at the outset of our film today, not to speak of designs that permit underride and override.

Mr. ECKHARDT. You state that Volvo already meets the phase 2 requirements of no damage to the car or to the bumper.

Mr. KELLEY. They have so stated, yes, sir.

Mr. ECKHARDT. At 5 miles per hour.

Mr. KELLEY. And 3 miles an hour.

Mr. ECKHARDT. 5 miles per hour.

No, front and rear, and 3 miles per hour corner.

Mr. KELLEY. Yes, sir.

Mr. ECKHARDT. Once you have met phase 1, how hard is it to meet phase 2?

Mr. KELLEY. At least in Volvo's case, I gather that they decided not to waste time or their customers' money meeting phase 1 and instead decided to go immediately to phase 2, and my personal opinion is that any cost-conscious manufacturer would make exactly that same decision. There is no reason to bother with meeting phase 1.

Mr. ECKHARDT. What arguments were advanced in the manufacturers' petitions to NHTSA for the delay in phase 2?

Mr. KELLEY. Essentially the argument, as I understand it as presented by General Motors and Ford Motor Company, the two petitioners on that issue, the argument was that the 1-year space between the application of phase 1 and the application of phase 2 would not provide enough lead time, and would present too tight a time frame within which they would have to move from one phase to another, and that therefore there should be at least a space of 2 years between those two phases.

Mr. ECKHARDT. Are there other manufacturers beside Volvo who meet phase 2 that you know of today?

Mr. KELLEY. Not that we know of, Mr. Chairman, but that does not mean that they are not out there.

Mr. ECKHARDT. You filed comments to the notice of proposed rulemaking to delay the phase 2 deadline.

Did you petition for or were you interested in having the department conduct a hearing on that question?

Mr.KELLEY. We filed comments with the department on its notice of proposed rulemaking for delay of the phase 2 deadline. We are now waiting for action on that notice of proposed rulemaking. We have urged the department very, very strongly on the record not to grant those petitions.

Mr. ECKHARDT. It is my understanding that they are required to hold a hearing under those circumstances.

Have they indicated to you their position with respect to the statutory requirement?

Mr. KELLEY. No, sir, they have not.

Mr. ECKHARDT. You stated that there was some reduction in damage sustained by cars as a result of the present standard 215.

Did that result in a decrease in insurance or an increase at a lesser rate than it would have otherwise increased?

Mr. KELLEY. Mr. Chairman, I am not competent to answer that question. The institute's work, which is entirely funded by auto casualty insurance companies, does not in any way get into analyses or contact with insurance pricing matters. I would hope if you do have insurance companies or trade association witnesses they would be able to answer that.

Mr. ECKHARDT. Thank you.

In what ways are the DOT compliance tests weak in your opinion? I think you have already indicated that the pendulum test is such as to give the most leeway for override.

Mr. KELLEY. If I may answer the question empirically, the DOT compliance test, both for the present safety standard and the identical test for the proposed no property damage bumper standard, will continue to permit the sorts of damage that we saw in the films today, in the 5-mile per hour corner barrier impacts, and in the override-underride situations. Those will not be precluded by those tests, and so we feel that those tests are not sufficient to take into account enough real world damage situations to do the consumer as much good as modern technology allows.

Mr. ECKHARDT. You know it has always puzzled me that, in a time of high level technology, there is something as primitive as the swinging of a pendulum. It would seem to me that some very sophisticated tests could be devised that might be quite different

from a mere mechanical impact and that would rather precisely determine possible damage from blows in many different ways. I am not an engineer, but it would seem to me that electronic analysis would be better than a single blow from a single mechanical object.

Could you comment on that?

Mr. KELLEY. In general, Mr. Chairman, I am absolutely sure that you are right, that modern testing technology could come up with much more productive and much more revealing tests for the adequacy of bumpers. I would say, as Mr. O'Neill has just reminded me, that the pendulum test is in part due to the face of the pendulum being designed to somewhat standardize the heights of bumpers, and as I think I mentioned a few moments ago, its intent is the proper one of minimizing override and underride. Unfortunately, as we have seen, it does not accomplish that intent, but coming back to your question and your comment, I think you are absolutely right.

I have always been led to believe, and I have believed, that Detroit was one of the world's leaders in engineering and engineering design prowess, and it appalls and saddens me that that engineering design prowess is not being applied on behalf of the consumer both in designing cars to resist damage and in finding tests to better replicate what is happening in the real world so as to further improve those designs.

Mr. ECKHARDT. Your comments about the consistent use by manufacturers of heavy and inefficient bumpers to meet the Federal standard imply that one should be skeptical of cost-benefit analyses showing that title I cannot be met in a way that provides net benefits to consumers.

Would you clarify this point and comment on whether you think the agency could use its present authority to set peformance standards in such a manner as to restrict inefficient design and encourage more cost beneficial design? If not, would you recommend that the agency be permitted to set design as opposed to performance standards?

Mr. KELLEY. Let me try to break that question down into a few pieces, if I may, Mr. Chairman.

First, as to the cost-benefit aspect of the question, Mr. O'Neill and I a few years ago wrote a commentary on this point which might be an appropriate inclusion in the record, if you wish it. It is not very long, and goes right to the heart of the question you have raised.

Mr. ECKHARDT. Without objection, it will be admitted in the record at this point.

[The information referred to follows:]

SOCIETY OF AUTOMOTIVE ENGINEERS, INC.
400 Commonwealth Drive, Warrendale, Pa. 15096

Costs, Benefits, Effectiveness and Safety: Setting The Record Straight

Brian O'Neill and A. B. Kelley

Insurance Institute for Highway Safety

SOCIETY OF AUTOMOTIVE ENGINEERS

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Toronto, Canada
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Costs, Benefits, Effectiveness and Safety: Setting the Record Straight

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INTRODUCTION

Society's goals for safer motor vehicles are expressed in two laws: the National Traffic and Motor Vehicle Safety Act of 1966 (1)* and the Motor Vehicle Information and Cost Savings Act of 1972 (2). These two laws direct the Federal government, through the National Highway Traffic Safety Administration (NHTSA), to translate motor vehicle safety goals into motor vehicle safety standards. The standards are minimum performance (not design) criteria for new car safety.

The concepts of "cost-benefit" and "cost-effectiveness" are increasingly cropping up in debate over present and future motor vehicle standards. Often they are introduced to attack, or justify, a particular standard. Just as often, they are misunderstood and misused.

*Numbers in parentheses designate References at end of paper.

ABSTRACT

The concepts of "cost-benefit" and "cost-effectiveness" are increasingly cropping up in debate over present and future motor vehicle standards. Often they are introduced to attack, or justify, a particular standard. Just as often, they are misunderstood and misused.

Since a motor vehicle safety performance standard has no costs per se, it cannot be evaluated either in cost-benefit or cost-effectiveness terms. It is the particular design alternatives available to manufacturers to achieve the objectives of a standard that have societal costs. The various design alternatives can be evaluated.

Cost-effective designs should be chosen to minimize societal costs, and until there is evidence that cost-effective designs have been chosen, cost-benefit studies are premature.

Even then, because of the major conceptual and methodological difficulties in the valuation of life and limb, cost-benefit studies will be appropriate only in the evaluation of designs not primarily intended to save lives and reduce injuries -- that is, vehicle designs to reduce property damage. Until manufacturers are forthcoming with accurate cost data, neither cost-effectiveness nor cost-benefit studies in this field can be relied upon. Pending legislation may resolve this.

The purpose of this paper is to define these two concepts of economic analysis, to show how very different one is from the other, and to provide discussion and examples of their growing misapplication in the area of motor vehicle safety standards development.

COST-BENEFIT ANALYSIS

Cost-benefit analysis measures a planned program's costs against its expected benefits, using identical monetary units of measurement -- most often dollars -- on both sides of the ledger. To oversimplify: the dam will cost $10,000 (in manhours, materials, land, alternative land uses, displaced houses, etc.) to build. It will produce $12,000 worth of benefits (hydroelectric power, arable land, flood reduction, increased recreation area, etc.).

Cost-benefit analysis can, in theory, be used to obtain socially efficient solutions to the resource allocation problems of an economy, and as such is an application of welfare economics. Such an analysis is concerned with the welfare of the complete economy, not any subset of it.

Cost-benefit analysis is based on the concept of the so-called "potential Pareto improvement," which is defined as a costless economic rearrangement in which the gains can be distributed so as to make everyone in the community better off (3).

In a cost-benefit analysis the present and future benefits and costs associated with the project under consideration are determined and compared. Future benefits and costs are usually discounted at some rate to reduce them to present values. In order to compare them, both the benefits and costs must be expressed in common monetary units. They are usually compared either by computing the ratio of benefits to costs (the well known "benefit-cost ratio") or by subtracting costs from benefits (the net benefits). Benefit-cost ratios greater than one or positive net benefits are usually considered as economic justification for the adoption of the project under consideration.

There are no substantial theoretical or conceptual difficulties for cost-benefit analyses of projects in which the costs and benefits can reasonably be quantified in monetary units. If, however, the principal benefits anticipated are savings in lives and/or reductions in the frequency and severity of injuries which cannot be reasonably quantified in monetary units, serious theoretical and conceptual difficulties arise.

The same difficulties also arise where the costs of a project involve the loss of life and/or increases in the frequency and severity of injuries.

Virtually all cost-benefit studies involving the loss of life or limb have assigned fixed monetary values to human life and limb. Values for a life in such studies are typically obtained either by computing the discounted future income of individuals or by computing the discounted differences between future earnings and personal consumption. These concepts and approaches have been criticized on a number of grounds (4,5) and, in a detailed critique, Mishan (3) concluded that they are "economically irrelevant."

It is well worth noting that NHTSA has expressed a similar view. In its recent notice of proposed rulemaking concerning

school bus crashworthiness, the agency stated that it "has conducted conventional cost-benefit studies on school bus safety, but the normal valuation techniques evidently do not adequately reflect general public opinion on the importance of protecting children from death or injury. It is obvious from voluminous mail and Congressional interest that society places a much higher value on the safety of its children than a conventional cost-benefit analysis would indicate." (Emphasis added.) (6)

Goodwin (7) suggested that the criticisms of these "values of a life" can be avoided "only if it is clearly specified that the money value arrived at is a minimum that society would find it worthwhile spending in order to avoid a fatal accident." NHTSA (8) also emphasized "that placing a value on a human life can be nothing more than a play with figures. We have provided an estimate of some of the quantifiable losses in societal welfare resulting from a fatality and can only hope that this estimate is not construed as some type of basis for determining the 'optimal' (or even worse, the 'maximum') amount of expenditure to be allocated to saving lives."

Mishan (3) also concludes that other approaches as well are "economically irrelevant concepts." The only economically justifiable concept, he finds, is one based on the notion of "compensating variation," which is the amount each member of the community is willing to pay or to receive, in order to feel that his overall welfare is unchanged, in compensation for the estimated change in risk. But this approach, while justifiable economically, is not practical at the present time and may never be so, because of the fundamental impossibility of accurately measuring each person's compensating variation.

It is clear from the preceding discussion that cost-benefit analyses involving the loss of life and limb are fraught with conceptual and methodological difficulties. Accepting the suggestion of Goodwin (7) and NHTSA (8) that the values conventionally used for a human life in cost-benefit analyses be considered as the minimum that society should find worthwhile spending in order to avoid a fatal accident leads to only minimum values for the benefit-cost ratios and the net benefits. There is no acceptable method for setting upper values. Thus, if validly interpreted, cost-benefit studies involving the loss of life and limb -- particularly those studies that have used unfavorable benefit-cost ratios to criticize motor vehicle safety standards, such as the RECAT report (9) and Lave and Weber (10) (studies with additional serious methodological deficiencies) -- can only yield very limited conclusions.* Furthermore, these shortcomings of method and approach could lead to the rejection of socially desirable solutions.

COST-EFFECTIVENESS ANALYSIS

Cost-effectiveness analysis compares the cost of alternative means for effectively achieving an agreed upon goal. The means

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*Joksch (11) has presented a critical appraisal of the applicability of cost-benefit analysis to highway safety, highlighting a number of additional problems and difficulties associated with cost-benefit analyses applied to this area.

may be programs, technologies, devices, or combinations of approaches. The goals are often expressed in public policy as laws and standards.

Much of the philosophy and methodology of cost-effectiveness analysis was derived from cost-benefit analyses. As a result, there are many similarities in the techniques and many people confuse the two.

The three requirements of a cost-effectiveness analysis were outlined by Fabrycky and Thuesen (12) as follows:

First, the systems or projects being compared must have common goals or purposes. (The comparison of passenger car occupant protection devices with passenger car property damage protection devices would not be valid.)

Second, alternative means for meeting the goal must exist. (In the case of virtually all vehicle safety performance standards, such alternatives exist, whereas with design standards there would be no alternatives.)

Finally, the capability of measuring the cost and effectiveness of each system must exist.

One of the fundamental differences between the cost-benefit method and the cost-effectiveness method is contained in the first requirement. This simply states that the systems being compared must have common goals or purposes, which do not have to be expressed in monetary units. Thus, for example, an objective could be a target reduction in the annual number of motor vehicle occupant fatalities, with no requirement that this objective be translated into monetary units. In the cost-benefit approach, both costs and benefits must be measured and compared in monetary units.

Clearly, since there are in general going to be several alternative designs and methods available for satisfying the objectives of a motor vehicle safety standard, a socially responsible manufacturer should choose the cost-effective design; that is, that design which satisfies the objectives of the standard with the lowest cost to society among the various alternatives.

DISCUSSION

The appropriate uses for cost-effectiveness methods and cost-benefit methods in motor vehicle safety improvement will be discussed in a moment. First, however, it is essential that one point be very clearly understood.

A motor vehicle safety performance standard has no costs per se and therefore it cannot be evaluated either in cost-benefit or cost-effectiveness terms. A performance standard is a minimum goal, and must not be confused with the means for achieving the goal.

It is the particular design chosen by a manufacturer to satisfy the objectives of the standard that has costs.* The

*It is important to note that standards do not always increase manufacturing costs, they have in some instances reduced costs. Furthermore, there are frequently significant cost increases or reductions to society in addition to those of manufacturing; these (sometimes referred to as indirect or spillover costs and/or benefits) must be considered in both cost-effectiveness and cost-benefit studies.

design alternatives, of course, can be evaluated.

Accepting the premise that the goals established by Congress are society's goals, it then becomes the manufacturer's obligation to society and government to demonstrate that his particular design choice for meeting the objectives of a particular standard is cost-effective. Until there is some convincing evidence that a cost-effective design has been chosen by the manufacturer, it is inappropriate and premature to undertake a cost-benefit study of designs that may be substantially more costly than is necessary.

Even then, because of the major conceptual and methodological difficulties in the valuation of life and limb, cost-benefit studies will be appropriate only in the decision-making processes involving standards not primarily intended to save lives and reduce injuries -- that is, vehicle safety standards to reduce property damage.

Congress recognized this distinction. Under Title I of the Motor Vehicle Information and Cost Savings Act (2) -- principally intended to reduce property damage losses resulting from low-speed crashes -- it included a mandatory requirement for the Department of Transportation (DOT) to consider both the costs and the benefits and to report to Congress the cost savings resulting from the administration of this title. However, in considering the National Traffic and Motor Vehicle Safety Act (1), which empowered DOT to set motor vehicle safety standards aimed at reducing deaths and injuries, Congress rejected draft language requiring such studies for safety standards. (13)

Since Congress itself recognized the inappropriateness of applying cost-benefit criteria to developing motor vehicle standards for reducing death and injury, it is necessary to ask why so-called cost-benefit studies are increasingly being forced into the standards-making process, where they clearly do not belong. (Cost-benefit analysis does, however, have a legitimate place in the development of property damage standards under the Motor Vehicle Information and Cost Savings Act of 1972, but not before there is evidence that cost-effective designs have been or will be chosen and that their advantages have not been or will not be negated by the pricing policies of the manufacturer.)

Turning now to cost-effectiveness: this method is a useful tool for comparing alternative ways to achieve a predetermined vehicle safety objective and selecting the most desirable way. It does not appear, though, that cost-effectiveness techniques are being used very much for that purpose.

In illustration, consider Federal Motor Vehicle Safety Standard (FMVSS) 215 (14). This exterior protection standard was issued in April 1971 and was intended to provide protection, beginning with the 1973 models, against damage to a limited range of "safety related equipment" in low-speed crashes. Although this was a standard aimed at protecting safety related equipment, it was widely hoped that one of the principal benefits would be reduction in the amounts of property damage occurring in low-speed crashes. Thus, the designs chosen by the various manufacturers to satisfy the requirements of this standard have been used to estimate both the benefits and the costs in cost-benefit studies

(15, 16, 17, 18), including the mandated DOT study, to justify or refute the proposed motor vehicle standard issued under Title I of the Motor Vehicle Information and Cost Savings Act.*

There is no evidence that the designs chosen to meet the requirements of FMVSS 215 are cost-effective. On the contrary, there is considerable evidence to suggest that the designs chosen by certain manufacturers are far from cost-effective. Casassa, et. al. (20) have shown huge differences in the replacement prices** of bumper systems for seven domestic 1974 models; front bumper replacement prices range from $111 to $347 and rear bumper replacement prices range from $80 to $296. Comparing replacement prices for subcomponents among the same seven domestic 1974 models, the bumper energy absorbers range in replacement prices from $13 to $67, a more than fivefold difference. Such huge price ranges for designs intended to perform the same function strongly suggest that cost-effectiveness has not been a concern of the manufacturers in meeting this standard.

The law leaves it entirely to the manufacturer to choose front and rear end designs that meet the minimum requirements of FMVSS 215. The manufacturer may under the standard develop, for instance, front and rear end designs with the following characteristics that would be costly to society:

--- A low performance level, so as to meet the standard yet permit sheet metal damage (not covered by the standard) at five miles per hour.

--- Ineffectiveness at higher speeds, so as to virtually guarantee costly damage -- and attendant sale of replacement and repair parts -- in impacts at speeds higher than five miles per hour.

--- Unnecessarily heavy components that increase fuel consumption.

--- Expensiveness of repair and/or replacement.

While such design choices would not be cost-effective to society, they could return substantial profits and also could create for the manufacturer large future sales of replacement and repair parts. It is also possible that the manufacturer could generate consumer hostility to the standard by choosing these unfavorable characteristics.

The manufacturer may, on the other hand, develop designs that seek to incorporate the following characteristics that should reduce society's costs:

--- Effectiveness in reducing

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*At the present time there is no federal motor vehicle standard that is directed exclusively toward the reduction of property damage. Under Title I of the Motor Vehicle Information and Cost Savings Act, a proposed standard (19) is due to go into effect beginning with the 1976 model year. The cost-benefit analysis required by law under this Act has been based inappropriately and almost entirely on the performance of recent model year vehicles that conform with FMVSS 215 (16).

**It is important to note the distinction between cost, which is the real cost to the manufacturer, and the price which is that charged to the consumer. At the present time there is no reliable information publicly available, or available to the Federal government, concerning the relationship between prices and costs.

auto body damage both at and above the five mile an hour minimum requirements, so as to further reduce owner and insurer costs in crashes.

--- Easiness and inexpensiveness of repair and/or replacement.

--- Lightweight components that reduce fuel consumption.

The example of Standard No. 215 typifies the difference between the standard, which is an objective that cannot be measured in cost terms, and the alternative ways available to meet it, which can be subjected to cost-effectiveness evaluation.

The difference is also apparent in examining other standards. For instance, FMVSS 202 (21) requires the provision of protection against whiplash injuries in rear-end crashes. Manufacturers have chosen to meet the standard in a variety of ways, ranging from designs requiring considerable adjustment by the user, to designs that are so well integrated with the seat back that no adjustment whatsoever is required.

FMVSS 301 (22) requires, as another example, that new cars be able to withstand a 30 mile per hour front-into-barrier crash without hazardous loss of fuel. The range of options available to manufacturers for meeting this standard includes relocation of fuel tanks and fuel lines, use of bladder-inner tanks (as in the 1975 model Chevrolet Corvette), and a wide variety of additional design and manufacturing alternatives.

Motor vehicle safety standards do <u>not</u> necessarily increase the manufacturing costs. For example, FMVSS 211 (23), which precludes the use of wheel nuts, wheel discs and hub caps that constitute a hazard to pedestrians and cyclists, has eliminated "scythe like" hub caps. These were presumably more costly to manufacture than less hazardous hub caps because they were invariably priced higher to the consumer; thus, in this instance costs were reduced as a result of a motor vehicle safety standard.

Consider, for another example of cost-reduction opportunities flowing from a still hypothetical standard (although one within the power of NHTSA to issue) limiting the maximum speed performance of new cars. A manufacturer could meet such a standard by adding a clumsy, inefficient "governor" device to its existing design for an overpowered automobile. But it also could meet the standard by redesigning the engine, power train and transmission to produce less horsepower, which would at the same time reduce the weight of the automobile and use less valuable metal and other resources, lower its fuel consumption, and lower its pollutant emissions, thereby substantially reducing both the direct and indirect costs to society.

(To say that a standard, as a goal, cannot per se be measured in cost-effectiveness terms is not, of course, to say that its effectiveness cannot be evaluated at all. On the contrary, safety standards must be subjected to continuing evaluation against the possibility that a standard's language may defeat its purpose. For example, recent studies (24, 25) have indicated that the wording of FMVSS 203 (26), requiring that steering assemblies be designed to absorb the driver's energy in a crash, may actually be precluding steering assembly designs that would perform better than those now available.)

It is clear that cost-effectiveness methods have a useful place in comparisons of alternative means for meeting the objectives of a motor vehicle safety standard, but not for assessing the standard itself.

It is also clear that cost-benefit analysis has a legitimate role in evaluating the desirability of a motor vehicle property damage standard once the most cost effective way to meet the standard is chosen, but does not have a legitimate role in evaluation of standards whose benefits are lives and health, not dollars and cents.

A closing note of caution: No cost-benefit or cost-effectiveness analysis can be performed if the costs of the system under scrutiny are unknown. For approaches to motor vehicle standards compliance, those costs are in fact largely unknown to all but the auto manufacturers themselves.

NHTSA has not made full use of its existing statutory power to obtain from the manufacturers detailed, reliable data as to the costs of alternative designs that meet particular safety standards. Nor have the manufacturers been forthcoming with any but vague and general information about costs.

The undependability of manufacturer-provided cost figures has been exemplified often. Recently the former director of General Motors Corporation's air bag project provided NHTSA with information on air bag system costs that was far more precise -- and far more encouraging for the public -- than the cost and price estimates that General Motors itself has released (27). After doing so, he stressed that his figures were "quite markedly different from possible other claims that you have heard as to how much the air cushion should cost."

Earlier this year a European auto manufacturer told the General Accounting Office (GAO) of its belief that industry-generated cost information is not useful for valid cost-effectiveness measurement. "... the auto industry," Volvo told GAO, "has in some instances taken advantage of the lack of methodology and released biased material aimed purely at resisting regulation." (Volvo added its belief that cost-effectiveness should be an NHTSA consideration, "but not necessarily the overriding consideration, in establishing the need for regulation.") (28)

In its report on "benefit-cost analyses" issued in August, GAO itself was critical both of NHTSA's methods for collecting usable cost information involving standards, as well as the industry's reluctance to furnish such information. (29)

On October 11, 1974, the Senate passed a bill -- earlier agreed on in conference between the two houses -- which may hold the key to solving this problem (30). The bill provides that manufacturers opposing an NHTSA standard on the "ground of increased cost" be required to submit cost information -- "information with respect to alleged cost increases resulting from action by the Secretary, in such form as to permit the public and the secretary to make an informed judgment on the validity of the manufacturer's statements" including "both the manufacturer's cost and the cost to retail purchasers."

If the bill becomes law, and if NHTSA makes vigorous use of the bill's provision for acquiring accurate cost data from manufacturers, cost-effectiveness and cost-benefit techniques can become useful tools in the motor vehicle safety field -- so long as they are used appropriately.

ACKNOWLEDGEMENT

The comments of William Haddon, Jr., M.D. and Leon S. Robertson, Ph.D. are gratefully acknowledged.

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Mr. KELLEY. The point made in that commentary, and the point that I would wish to make, is that the department has power only to set performance standards, and not design standards, and therefore is always one step removed from reaching cost-benefit conclusions about the effect of its standards. The department may not and does not direct that a manufacturer put some specific costs assessable design on its cars. It simply tells the manufacturer that the car shall perform in such and such a fashion under such and such crash or other conditions, and leaves within the broad latitude of the manufacturer the choice of selecting from available alternative designs—and in the case of bumpers, they might be designed such as Mr. Taylor's bumper, they might employ alternative kinds of shock mounts, they might be soft nose, or use plastics that do the energy absorbing job in a variety of different ways—any one of a number of alternatives, each with a different cost, but none with the final cost in the cost-benefit sense.

It seems to me that the department must limit itself, once manufacturers have selected their alternative designs, to assessing the results of those choices, and then where necessary the department must persuade, encourage, cajole manufacturers to do design jobs that are more cost effective in meeting those performance standards. That comes to the last part of your question. Should the government be authorized to set design standards for auto manufacturers?

My own feeling is that the government would not do a good job of designing automobiles, and I would hope that the auto manufacturing industry will not bring upon itself that which it says it fears most, the mandating of automobile designs by government because of the industry's reluctance to give good design to American consumers under existing peformance standards, and yet I see that happening more and more, and it alarms me greatly.

Mr. ECKHARDT. I rather agree with you, because of course performance standards leave a lot more room to innovation and change, and I think that is true not only with respect to safety and cost saving, but with respect to all design. I am wondering though if sometimes because we have to approach this in a somewhat obtuse or indirect way we don't find ourselves faced with arguments which are really not valid, and would obviously not be valid if we were looking at a prototype design. I am just thinking out loud here.

What would be wrong with the agency affording a specific design as an option? "We will not hold you to a design standard, but here is what you could do, and if you did this, it would be acceptable."

Mr. KELLEY. That certainly is one interesting and very possibly productive approach, Mr. Chairman. I think another part of the answer to the question and to this issue generally is one's interpretation of the word performance in the setting of performance standard. It seems to me—and I hasten to interject here that I am not an attorney and I am not an expert on statutory language—but it seems to me that the weight of a bumper, the sorts of materials a bumper uses, the impact on the nation's resources that the manufacturing and processing of that bumper may present are, in and of themselves, performance matters, and they perhaps are subject to performance criteria just as much as how the bumper will perform

in the crash is subject to performance criteria, so I am not suggesting that performance is such a broad term that within it any manufacturer or any other interest should be allowed to do anything. How components of cars perform in consonance with national criteria, with new priorities in the nation, it seems to me, is a very legitimate subject to which performance standards may address themselves.

Mr. ECKHARDT. Let me pose a question without suggesting in the question any solution.

It has been intimated in the discussions that I have had with persons familiar with this subject that manufacturers will meet precise performance standards, and in so doing, permit considerable damage within the interstices of these standards.

Now that seems to me to be a very bad thing, because it may tend to cause design calculated to prevent the theoretical test risk, but not to prevent the actual risk.

I don't know how you really ever answer that, unless your performance standards are subjected to of much more sophisticated testing than that which is now used.

Mr. KELLEY. I am afraid that our own testing experience, and my own knowledge of the auto industry's past record, suggests that you are entirely accurate, and that what is being met too often is not the intent of a standard, not the public interest goal, not the goal of giving the consumer the best, but instead the barest possible minimum interpretation of the performance standard, and often in ways that violate other of the consumers' needs, and that the spirit—and I know of no other way to put it, although it may sound trite—that the spirit of the law and the spirit of the standards and the concern that gave rise to them in the first place are not being responded to.

What is being responded to is the need for simply getting by, by meeting, just barely meeting, a compliance test, and never exceeding it.

Mr. ECKHARDT. You say that the technology has been available at least since the passage of this act, to put damage preventing bumper systems on all U.S. cars. You have also conducted extensive crash testing in which you have measured the repair damage to particular makes and models in low speed crashes.

Can you, on the basis of your research, provide any sort of estimate of the aggregate dollar losses suffered by consumers per year or for a longer period as a result of unnecessary crash damage?

Mr. KELLEY. Our data, Mr. Chairman, don't produce an overall aggregate figure for the total amount of dollars being needlessly wasted by damage that has been designed into automobiles for being sustained in low speed crashes. I am sure it would be, if computed, an absolutely mind-staggering figure. It does not come out of our data.

Mr. ECKHARDT. That really leads somewhat to title II, which was designed to obtain some figures that would constitute a gross damage measurement, and also permit a comparison of repairability costs by makes and models of automobiles. I would like to ask you this. You have not addressed title II of the act in your statement, but I would like to ask you what role the Highway Loss Data Institute, which is funded by your organization, has played in meeting the requirements of the title.

Mr. KELLEY. Yes.

Mr. Chairman, the Highway Loss Data Institute, which is a companion organization to the Insurance Institute for Highway Safety, was set up a few years ago as a mechanism for gathering data based on insurance company information, gathering data on the size and frequency of various kinds of damage and human injury claims by individual make and model of automobile, and the Highway Loss Data Institute makes public the results of all of that data.

Mr. O'Neill, who is with me here today, is, in addition to being the vice president of Research of the Insurance Institute for Highway Safety, a special consultant to the Highway Loss Data Institute. He was one of those instrumental in designing that organization and is now instrumental in designing its work, and I would like him to describe for us, if you would agree, how the Highway Loss Data Institute works and how its operation fits in with the title II requirements.

Mr. ECKHARDT. We would very much like to have him do that. We had intended title II as a title in which the Federal agency would utilize such information and give it more or less the imprimatur of official sanction. I assume your agency, sir, is assembling some of the kind of data that we had in view in title II.

Mr. O'NEILL. Yes, Mr. Chairman. The Highway Loss Data Institute was formed in December of 1972, and at the present time it is collecting data on insurance coverages for damage both to the vehicles and to their occupants. At the present time 10 of the larger insurers in this country are supplying data to HLDI, and among them we think they respresent something over one third of all insured vehicles in the country. The Highway Loss Data Institute has produced 21 reports so far, and produces reports each year on the current model year. We collect data on the most recent three model years at any given time, so right now we are collecting data on the 1977 models, 1976 models, and 1975 models. Beginning in September of this year we will begin collecting data on the 1978 models.

We think the results that we have produced so far go a very long way towards providing the sort of information that was required under title II of this act.

Mr. ECKHARDT. Title II has been criticized to me on grounds that information could not be assembled soon enough to give consumers information with respect to choosing among present models. It has always seemed to me that this is not entirely a valid criticism. First, there is frequently a similarity among models and designs, and in model from year to year. Second, even if a change is made to take care of defects revealed in the title II data, and if the maker is unduly prejudiced by a bad report on his last model, he certainly has access to advertising to show that he has an improved model. This is very much as I have seen in certain eating establishments with large signs saying, under new management", that always seem to indicate that the last one was very bad.

Would you care to comment on that point?

Mr. O'NEILL. I think you are correct, Mr. Chairman.

The first model year that we collected data and produced results for the Highway Loss Data Institute was the 1972 model year,and we have produced results on the loss experience of every model year since then, and we have seen, over these model years, a certain amount of consistency from year to year among the same makes and models. I think this is increasingly the case. We are seeing fewer and fewer design changes with the cars each new model year, and certainly there has been some consistency in the results for particular make and model, from year to year.

Mr. ECKHARDT. Of course actually this information is not all negative to manufacturers. It may also reveal year-to-year model improvements which are to the credit of the automobile maker.

Mr. O'NEILL. Yes, sir.

Mr. Chairman, certain makes and models have been performing consistently better than average, and other makes and models over the years have been performing consistently worse than average, so yes, it works both ways.

Mr. KELLEY. I might say, Mr. Chairman, that the Highway Loss Data Institute has as one of its goals the publishing of its data as early as possible, for individual makes and models, and certainly for market classes, and as much as possible publishes those data within the model year while that car is still on the market. I think that goes to your point about the timeliness of the availability of data to consumers.

Mr. ECKHARDT. Thank you very much for your presentation.

Mr. KELLEY. Thank you, Mr. Chairman.

Mr. ECKHARDT. There is one other thing. I wonder if Mr. Taylor would like to make a few comments or reply to a few questions.

Mr. Taylor, how heavy is your bumper system compared with the regular Gremlin system?

Mr. TAYLOR, SR. The standard bumper system on the car weighs 62.4 pounds. Ours weighs 62.6 with the bumper guards on. If you add the bumper guards on the standard AMC, which are an option, it comes out 2 pounds heavier than ours.

Mr. ECKHARDT. How heavy would such a bumper be in mass production?

Mr. TAYLOR, SR. You could take about 2 pounds off that existing bumper system, using their steels. If you were to use steels that are available which would reduce the weight still further, you could take it down to the 38 pounds, the weight of our original Hornet of 1971, which passes all the specifications of this present Gremlin.

Mr. ECKHARDT. I assume then that you are saying that bumper systems that would give much better performance than present bumpers could be produced economically and without weight increases?

Mr. TAYLOR, SR. Yes, definitely.

Mr. ECKHARDT. Your bumper system does not have a plastic filler panel, a so-called gravel guard between the bumper and the body, like many other cars in the film. Why not?

Mr. TAYLOR, SR. That strip is a particular sore point with me. I was called to AMC to lengthen my bumper shock a half-inch stroke so that filler strip would not dent the trunk. It should not really be called a gravel shield. In truth it is a trap.

Under my present Volare test car, which has the same strip on the back, during the Buffalo blizzard, I was appalled to get under the car and find out that the bumper was packed solid with ice and snow from the bumper to the body and in a 2-mile-an-hour crash I would have done $500 damage to the car. Now that is only part of the problem.

This is a strip, the first one I could catch.

Mr. ECKHARDT. You just happened to have that with you?

Mr. TAYLOR, SR. Just happened to have it with me. It is a particular sore point. Its cost is $40. They cannot afford a nickel more for a shock absorber, but they put that strip worth $40 on the car.

Now for the real clincher. To put that on 5 million vehicles requires 22.5 million gallons of petroleum per year, to make the strip, and that is enough fuel to fly Pan American's entire flight of 747s, 707s, 727s for 10 days, and it is absolutely useless.

Mr. ECKHARDT. Is that at an extra cost?

Mr. TAYLOR, SR. Extra cost and absoutely unessential. The Pacer does not have it on, the Gremlin does not have it on, on the Matador coupe, we prevailed on them to just cover the bumper shock. The Matador station wagon has it, and when I complained to AMC aBout it, they said well, GM has it on. We all have to follow suit.

Mr. ECKHARDT. Well, I guess you have to put the shiny chromium on. Then you have to cut down the glaze or the shine with something to cover it over.

Mr. KELLEY. Mr. Chairman, if I may, the Department of Transportation has within the past day or so issued an amendment, or a clarification if you will, of the phase 1 bumper standard under title I. The question before it, put by the auto manufacturers was: Is that filler panel part of the bumper, meaning can it be damaged under phase 1, or is it not part of the bumper, meaning no, it may not be damaged? Here is the agency's decision on that question:

"The agency has reexamined the role of filler panels and stone shields in the bumper system, and finds that although they do not actuallly hold the bumper to the vehicle frame, they are cosmetic components that are part of the entire system that performs the task of attaching the bumper to the frame of the car."

"NHTSA has concluded that permitting damage to filler panels and stone shields will not significantly degrade the level of performance required for vehicles manufactured after September 1, 1978."

In short, it may now also be damaged under phase 1, even though it is a cosmetic component.

Mr. ECKHARDT. When I heard the first part of that I thought the answer was going to come out the other way.

Mr. KELLEY. When I read the first part of it this morning, I thought that the answer would come out the other way.

Mr. ECKHARDT. I have had that happen to me as a lawyer, particularly when a judge starts talking .

Mr. KELLEY. I was reminded of Secretary Coleman's airbag decision when I got to the punch line this morning.

Mr. ECKHARDT. Mr. Taylor, how many people worked on the development of your system, and how long?

Mr. TAYLOR, SR. I think I will defer to my son and he will refer to the design process because he was in the middle of it also.

Mr. TAYLOR, JR. As Mr. Kelley had explained, this entire system, which you saw the films of was designed, built, constructed, tested in a turnkey type of operation within a period of around 45 days, I guess. The basic system which we have come up with managed to utilize the existing face bar from the Gremlin vehicle. We modified the back-up structure to the bumper. We came up with our own mounting brackets, and of course used the bumper shock absorber, which was of our design, which was used on American Motors cars in 1974, a 3-year-old bumper shock to meet a standard that people have trouble meeting today.

The entire system was developed, built, complete, by three engineers and one machinist in that period.

Mr. ECKHARDT. Of course, Mr. Taylor, one can always produce a prototype that will do a particular job. I suppose the real question is whether or not the prototype is practical for mass production.

Can you comment on whether or not within your view the type of energy absorber that you are showing us here can be produced at a reasonable cost?

Mr. TAYLOR, JR. I think it is important to remember that the bumper system is more than just the energy absorber. It is a system. It includes the steel parts, the energy asorbers, the mounting brackets, a rubber trim, vinyl strips, whatever.

As I mentioned, the actual energy absorber which we used on that car was an original equipment 1974 American Motors part. You can go down to a used car lot and find a 1974 Ambassador wagon, remove the energy absorber from it, and you have essentially the same energy absorber that we have on the car right out there.

Mr. ECKHARDT. So what you are showing us is an assemblage of equipment, all of which has been mass-produced; is that correct?

Mr. TAYLOR, JR. As I said, the actual chrome face bar is the original American Motors face bar. The two small rubber bumper guards which we used on the bumper to prevent local denting and scratching, those were a 1977 American Motors Gremlin rubber bumper guard which is an option on the vehicle.

The back-up structure to the bumper, steel rim reinforcement and the mounting brackets, were fabricated from scratch by our firm using a very common, readily available automotive type of steel alloy, in this case manufactured by Republic Steel and available just about in any quantity that you wish, so it is very, very conventional in construction. The uniqueness of it is the particular combination of components used, quite frankly, which gets you around the problem of a damage-preventing angle barrier hit merely by combining such components as are necessary to get around that problem.

Right now the auto makers have no requirement really in the present law to produce a zero damage system, and it is evident from the films that they have elected not to do so.

Mr. ECKHARDT. I want to thank all of you gentlemen for your aid to this subcommittee.

Mr. KELLEY. Thank you, Mr. Chairman.

Mr. ECKHARDT. Mr. Andre Maisonpierre. We are glad, sir, to have you before this committee again.

STATEMENT OF ANDRE MAISONPIERRE, VICE PRESIDENT, AMERICAN MUTUAL INSURANCE ALLIANCE AND ON BEHALF OF THE NATIONAL ASSOCIATION OF INDEPENDENT INSURERS

Mr. MAISONPIERRE. Thank you very much, Mr. Chairman.

Today I am appearing on behalf of the American Mutual Insurance Alliance, and also on behalf of the National Association of Independent Insurers, which is an association of 600 property and casualty insurance companies.

I believe, Mr. Chairman, that you have received a letter from Mr. Mertz, the president of the association.

MR. ECKHARDT. Without objection, it will be inserted in the record at this point [See p. 78].

Mr. MAISONPIERRE. Mr. Chairman, in view of the time constraint, I would like to skip over parts of our statement, but I would appreciate it if the whole statement could be made a part of the record.

Mr. ECKHARDT. Without objection, it will be so ordered.

Mr. MAISONPIERRE. Thank you very much, sir.

My name is Andre Maisonpierre. I am a vice president of the American Mutual Insurance Alliance. We are the major national association of mutual property and casualty insurance companies. Our members provide automobile insurance coverage for both personal and commercial vehicle owners in all 50 States and the District of Columbia.

We appreciate the opportunity to appear before this subcommittee to present our views on the implementation of the Motor Vehicle Information and Cost Savings Act of 1972, Public Law 92-513.

The purposes of Public Law 92-513 are to promote competition among motor vehicle manufacturers in the design and production of safe motor vehicles and to reduce the cost of automobile ownership and maintenance to consumers. These objective are to be achieved by improving the quality of automobiles and by attempting to develop consumer information systems which will facilitate consumers' market choice.

Our testimony today will assess Title I—Bumper Standards, and Title II—Automobile Consumer Information Study, as related to the act's stated objectives.

TITLE I—BUMPER STANDARDS

The alliance is disappointed by the lack of effective action in the area of bumper standards. A brief look at the history of bumper standards wil illustrate some of the causes of our discontent.

Title I requires the National Highway Traffic Safety Administration, NHTSA, to develop new bumper standards for passenger cars which would limit property damage caused by low-speed collisions and provide "the maximum feasible reduction of cost to the public and to the consumer..."

Prior to the act, NHTSA could ony set safety-related standards. Ths had been done in Federal Motor Vehicle Safety Standards No. 215, still the only bumper standard in effect, which prohibits damage to safety-related parts such as radiators and breaklines in low-speed impacts.

In August 1973, NHTSA proposed a property damage bumper standard, which would also incorporate the current Federal safety standard on bumpers, to be effective with 1976 models. In a series of subsequent rulemaking actions, the proposed effective date was repeatedly delayed. Finally, in March 1976, NGTSA adopted a final rulemaking the property damage standard effective for 1979 models with more stringent requirements going into effect for 1980 models.

In March of this year, NHTSA has proposed yet another delay in its standard limiting property damage to cars in most speed crashes. In response to requests from General Motors and Ford Motor Company, the agency is proposig to delay for 1 year the effective date of the more stringent second phase of its standard. NHTSA has proposed the delay even though the auto makers already have been given more than three model years, since adoption of the standard in March 1976, to prepare for the 1980 model year bumper requirements.

Actually, Mr. Chairman, this lack of effective Federal action is what we feared 6 years ago when we testified on the bills which eventually led to the enactment of title I. At that time there had already been some state action requiring auto manufacturers to provide better auto bumpers.

California had enacted a law requirig that cars sold after September 1, 1973, be equipped with bumpers capable of sustaining a 5-mile-per-hour impact without appreciable property damage to the front or rear of the vehicle. Maryland, Florida, Georgia, North Carolina, and Minnesota had enacted similar legislation.

Our concern was that the Federal bill would preempt these enacted State laws and either set standards below existing State programs or stop any further State action while the applicable Federal standard was being developed. This is exactly what has happened.

Despite the inclusion of a grandfather clause for existing State laws, the enactment of title I forestalled any enforcement action by these States. Apparently States were wooed, as we were, into the false belief that the required national standard would be forthcoming shortly with Federal enforcement. Unfortunately, this has not occurred.

Mr. Chairman, the alliance believes that the interests of the consumer have ben ill-served by this lack of effective action. Any further delay in the implementation of the bumper standards, as is proposed, would subject automobiles to needless damage and their owners to financial loss.

In comments to NHTSA, we have joined with the other insurance associations in protesting the proposed delay. Our joint comments are attached, Exhibit A [See p. 76].

TITLE II—AUTOMOBILE CONSUMER INFORMATION STUDY

Two years ago in similar oversight hearings, the alliance recommended that serious consideration be given to the repeal of title II.

At that time it had already become evident that in spite of the very best of will and cooperation by both the Department of Transportation and the insurance industry, little benefit coud be expectd to flow from this title.

We believe that the additional information and knowledge developed since then has proven that our recommendation was a correct one.

The purpose of this title was stated to be the development of a comprehensive consumer information system which would allow automobile buyers to compare the followig characteristics of passenger cars by make and model:

a. damage susceptibility,
b. crashworthiness,
c. ease of diagnosis and repair.

In addition, this title required DOT to promulgate a regulation directing automobile dealers to provide prospective automobile purchasers with comparative insurance costs of various makes and models.

Shortly after the enactment of Public Law 92-513. the insurance industry established a representative all-insurance industry committee to fully cooperate with DOT in the implementation of this title.

It soon became evident that DOT apparently thought insurance companies' loss data could be used as the primary source of information to judge make and model for the characteristics mentioned above.

Just prior to the enactment of Public Law 92-513, the insurance industry was in the process of establishing th Highway Loss Data Institute, HLDI, as a nonprofit organization to gather, process, and provide the public and private sectors with expanded information concerned with human and economic losses resulting from highway crashes.

The industry offered to use HLDI as one source through which DOT data needs could be met. However, it was soon recognized that the information being captured by the industry through HLDT did not truly reflect damageablity by make and model in the real word.

Let me explain.

The insurance industry pays automobile damage losses under two separate coverages: collision and property damage liability. Property damage liability losses are inaccurate reflections of damageability. Hence, only collison losses paid to insureds represent actual losses incurred. However, collision losss tend to emphasize front-end damages and ignore rear-end damages which are usually paid as property damage liability claims.

As a result, DOT inquired whether more balanced loss information might be secured from data contained in inusrance company claims files. The industry did not think so but agreed to particpate in a joint project to assess the availability of useful data from this source. Accordingly, a limited review of the availablity of data from claims files was conducted jointly by DOT and the insurance representatives. This showed that less than 50 percent of the claims files examined contained data needed to establish damageability or crashworthiness characteristics.

Additionally, this study demonstrated the unreliability of gathering data through manual claims file analysis.

In spite of the discouraging results of this initial claims file analysis project, the industry cooperated with the Department of Transportion and its contractor, General Electric, in a substantially-expanded claim file study.

In its final report to DOT, General Electric stated:

"Even though a particular make/model may experience a higher accident involvement, reflect a high injury rate, as well as high damage in terms of cost to repair, it cannot be said that thse adverse characteristics are soley a function of the car itself. The type of driver—high or low risk—and driving environment to which the vehicle is exposed—rural, urban, time of day, weather, geographic location, et cetera—are factors which influence a vehicles's record and must therefore be considered."

While General Electric tried to develop methodologies to account for such nonvehicle factors, it found, however, that:

"Available data have not permitted adjustments for many of these factors in the demonstration analysis."

GE went on to say that:

"Although differences between make/models of cars were found in all three areas of concern, the magnitudes of the differences were small. These small differences may have a negligible influence on the consumer."

Mr. Chairman, the combined experience under title II by the insurance industry, the Department of Transportation and DOT's contractors has shown that tools are not presently available to forecast the damageability or crashworthiness characteristics of new cars during the better part of their initial model year.

These characteristcs can, however, be identified after these new cars have generated enough loss data of their own, but this takes time. Presently HLDI is in fact collecting these data and has extracted from them a wealth of information. These data indicate that there are considerable differences in damageability by body styles and market classes and, most importantly, that full size cars have a better loss experience that smaller models.

More recently, HLDI started collecting some injury data from losses paid under personal injury protection—no-fault—and medical pay coverages. These data indicate that occupants of small cars run a much greater risk of being killed or injured in a crash than occupants of large cars.

Thus, the HLDI find that occupants of small cars face a double risk—their vehicles are more likely to sustain damage and offer less protection against injury than larger vehicles.

This is valuable information. For instance, it shows that we can expect more damage and injuries as our national energy requirements force substantial decreases in average car sizes unless smaller cars are built with better damage protection and equipped with better occupant protection, such as airbags.

But this information comes to us after the introducton of the new makes and models. It takes approximately a year before enough data are accumulated for analysis. These data are not

representative of all crash situations. They do not reflect all crash losses.

Nevertheless, we are optimistic that eventually the industry may find a way to use these data in their rates. One large company has already started a plan which will reflect some of the collision experience for some cars. Other companies may follow this lead. In any case, the rest of the industry will be carefully monitoring this experiment.

We submit, Mr. Chairman, that the voluntary efforts of the industry in the marketplace are an effective substitute for title II.

When Congress enacted the Motor Vehicle Information and Cost Savings Act, it declared its objective to be to reduce the economic loss resulting from damage to passenger motor vehicles involved in motor vehicle accidents. Our companies wholeheartedly support that objection.

We believe, however, that title II Has not and wil not achieve that objective.

We suggest that title II has served its usefulness and there should be no further allocation of resources devoted to it.

While we acknowledge that the efforts devoted to its implementation have provided valuable experience in determining which consumer information system would or would not work, we do not believe that spending additional private and public funds for any further implementation of title II would be in the public interest.

[Mr. Maisonpierre's prepared statement and attachments follow:]

Statement of the

AMERICAN MUTUAL INSURANCE ALLIANCE

My name is Andre Maisonpierre. I am a vice president of the American Mutual Insurance Alliance. We are the major national association of mutual property and casualty insurance companies. Our members provide automobile insurance coverage for both personal and commercial vehicle owners in all fifty states and the District of Columbia.

We appreciate the opportunity to appear before this subcommittee to present our views on the implementation of the Motor Vehicle Information and Cost Savings Act of 1972 (PL 92-513). The purposes of PL 92-513 are to promote competition among motor vehicle manufacturers in the design and production of safe motor vehicles and to reduce the cost of automobile ownership and maintenance to consumers. These objectives are to be achieved by improving the quality of automobiles and, by attempting to develop consumer information systems which will facilitate consumers' market choice.

Our testimony today will assess Title I - Bumper Standards and Title II - Automobile Consumer Information Study as related to the Act's stated objectives.

TITLE I - BUMPER STANDARDS

The Alliance is disappointed by the lack of effective action in the area of bumper standards. A brief look at the history of bumper standards will illustrate some of the causes of our discontent.

Title I requires the National Highway Traffic Safety Administration (NHTSA) to develop new bumper standards for passenger cars which would limit property damage caused by low

speed collisions and provide "the maximum feasible reduction of cost to the public and to the consumer....".

Prior to the Act, NHTSA could only set safety-related standards. This had been done in Federal Motor Vehicle Safety Standards No. 215, still the only bumper standard in effect, which prohibits damage to safety-related parts such as radiators and breaklines in low speed impacts.

In August 1973, NHTSA proposed a property damage bumper standard, which would also incorporate the current federal safety standard on bumpers, to be effective with 1975 models. In a series of subsequent rule making actions, the proposed effective date was repeatedly delayed. Finally, in March 1976, NHTSA adopted a final rule, making the property damage standard effective for 1979 models with more stringent requirements going into effect for 1980 models.

In March of this year, NHTSA has proposed yet another delay in its standard limiting property damage to cars in most speed crashes. In response to requests from General Motors and Ford Motor Company, the agency is proposing to delay for one year the effective date of the more stringent second phase of its standard. NHTSA has proposed the delay even though the auto makers already have been given more than three model years, since adoption of the standard in March 1976, to prepare for the 1980 model year bumper requirements.

Actually, Mr. Chairman, this lack of effective Federal action is what we feared six years ago when we testified

on the bills which eventually led to the enactment of Title I. At that time there had already been some state action requiring auto manufacturers to provide better auto bumpers. California had enacted a law requiring that cars sold after September 1, 1973, be equipped with bumpers capable of sustaining a 5-mph impact without appreciable property damage to the front or rear of the vehicle. Maryland, Florida, Georgia, North Carolina and Minnesota had enacted similar legislation.

Our concern was that the Federal bill would preempt these enacted state laws and either set standards below existing state programs or stop any further state action while the applicable federal standard was being developed.

This is exactly what has happened.

Despite the inclusion of a "grandfather" clause for existing state laws, the enactment of Title I forestalled any enforcement action by these states. Apparently states were wooed, as we were, into the false belief that the required national standard would be forthcoming shortly with federal enforcement. Unfortunately, this has not occurred.

Mr. Chairman, the Alliance believes that the interests of the consumer have been ill-served by this lack of effective action. Any further delay in the implementation of the bumper standards, as is proposed, would subject automobiles to needless damage and their owners to financial loss.

In comments to NHTSA, we have joined with the other

insurance associations in protesting the proposed delay. Our joint comments are attached (Exhibit A).

TITLE II - AUTOMOBILE CONSUMER INFORMATION STUDY

Two years ago in similar oversight hearings, the Alliance recommended that serious consideration be given to the repeal of Title II. At that time, it had already become evident that in spite of the very best of will and cooperation by both the Department of Transportation and the insurance industry, little benefit could be expected to flow from this Title. We believe that the additional information and knowledge developed since then has proven that our recommendation was a correct one.

The purpose of this Title was stated to be the development of a comprehensive consumer information system which would allow automobile buyers to compare the following characteristics of passenger cars by make and model:

a. Damage Susceptability

b. Crashworthiness

c. Ease of Diagnosis and Repair

In addition, this Title required DOT to promulgate a regulation directing automobile dealers to provide prospective automobile purchasers with comparative insurance costs of various makes and models.

Shortly after the enactment of PL 92-513, the insurance industry established a representative all-insurance industry committee to fully cooperate with DOT in the implementation of this Title.

It soon became evident that DOT apparently thought insurance companies' loss data could be used as the primary source of information to judge make and model for the characteristics mentioned above.

Just prior to the enactment of PL 92-513, the insurance industry was in the process of establishing the Highway Loss Data Institute (HLDI) as a non-profit organization to gather, process and provide the public and private sectors with expanded information concerned with human and economic losses resulting from highway crashes.

The industry offered to use HLDI as one source through which DOT data needs could be met. However, it was soon recognized that the information being captured by the industry did not truly reflect damageability by make and model in the real world. Let me explain.

The insurance industry pays automobile damage losses under two separate coverages: collision and property damage liability. Property damage liability losses are inaccurate reflections of damageability. Hence, only collision losses paid to insureds represent actual losses incurred. However, collision losses tend to emphasize front-end damages and ignore rear-end damages which are usually paid as property damage liability claims.

As a result, DOT inquired whether more balanced loss information might be secured from data contained in insurance company claims files. The industry did not think so but

agreed to participate in a joint project to assess the availability of useful data from this source. Accordingly, a limited review of the availability of data from claims files was conducted jointly by DOT and the insurance representatives. This showed that less than 50% of the claims files examined contained data needed to establish damageability or crashworthiness characteristics. Additionally, this study demonstrated the unreliability of gathering data through manual claims file analysis.

In spite of the discouraging results of this initial claims file analysis project, the industry cooperated with the Department of Transportation and its contractor, General Electric, in a substantially expanded claim file study.

In its final report to DOT, General Electric stated:

> "even though a particular make/model may experience a higher accident involvement, reflect a high injury rate, as well as high damage in terms of cost to repair, it can not be said that these adverse characteristics are solely a function of the car itself. The type of driver (high or low risk) and driving environment to which the vehicle is exposed (rural, urban, time of day, weather, geographic location, etc.) are factors which influence a vehicle's record and must therefore be considered."

And while General Electric tried to develop methodologies to account for such non-vehicle factors, it found, however, that:

> "available data have not permitted adjustments for many of these factors in the demonstration analysis."

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> cars were found in all three areas of concern, the magnitudes of the differences were small. These small differences may have a negligible influence on the consumer."

Mr. Chairman, the combined experience under Title II by the insurance industry, the Department of Transportation and DOT's contractors has shown that tools are not presently available to forecast the damageability or crashworthiness characteristics of new cars during the better part of their initial model year.

These characteristics can, however, be identified after these new cars have generated enough loss data of their own. But, this takes time. Presently HLDI is in fact collecting these data and has extracted from them a wealth of information. These data indicate that there are considerable differences in damageability by body styles and market classes and, most importantly, that full size cars have a better loss experience than smaller models.

More recently, HLDI started collecting some injury data from losses paid under personal injury protection (no-fault) and medical pay coverages. These data indicate that occupants of small cars run a much greater risk of being killed or injured in a crash than occupants of large cars.

Thus, the HLDI data find that occupants of small cars face a double risk - their vehicles are more likely to sustain damage, and offer less protection against injury than larger vehicles.

This is valuable information. For instance, it shows that we can expect more damage and injuries as our national energy requirements force substantial decreases in average car sizes unless smaller cars are built with better damage protection and equipped with better occupant protection such as airbags.

But this information comes to us after the introduction of the new makes and models. It takes approximately a year before enough data are accumulated for analysis. These data are not representative of all crash situations. They do not reflect all crash losses.

Nevertheless, we are optimistic that eventually the industry may find a way to use these data in their rates. One large company has already started a plan which will reflect some of the collision experience for some cars. Other companies may follow this lead. In any case, the rest of the industry will be carefully monitoring this experiment.

We submit, Mr. Chairman, that the voluntary efforts of the industry in the marketplace are an effective substitute for Title II.

When Congress enacted the Motor Vehicle Information and Cost Savings Act, it declared its objective to be "to reduce the economic loss resulting from damage to passenger motor vehicles involved in motor vehicle accidents." Our companies wholeheartedly support that objective. We believe, however, that Title II has not and will not achieve that objective.

We suggest that Title II has served its usefulness and there should be no further allocation of resources devoted to it. While we acknowledge that the efforts devoted to its implementation have provided valuable experience in determining which consumer information system would or would not work, we do not believe that spending additional private and public funds for any further implementation of Title II would be in the public interest.

Exhibit A

MOTOR VEHICLE SAFETY AND DAMAGE STANDARDS

Commentary on the Proposed Amendments to Bumper Requirements
49 CFR Parts 571, 581, Docket Nos. 74-11; 73-19; Notice 13; 10

Submitted On Behalf Of:

American Insurance Association (AIA)
American Mutual Insurance Alliance (AMIA)
National Association of Independent Insurers (NAII)
National Association of Mutual Insurance Companies (NAMIC)

The interests of the american consumer would be ill-served by the NHTSA's proposal to delay the effective date of its 1980 standard for limiting property damage to cars in low-speed crashes.

We have reached the above firm conclusion on the basis of the following considerations:

1. In the Motor Vehicle Information and Cast Savings Act of 1972, Congress directed the Department of Transportation to set effective standards for reducing designed-in damage in low-speed auto crashes. Thus, the auto manufacturers will have had eight years "lead time" by 1980 to develop improved bumper designs.

2. In February of 1976, NHTSA issued a minimal property damage bumper standard that limits costly damage to the vehicle in 5 M.P.H. crashes, effective in stages for the 1979 and 1980 models. NHTSA has indicated that "most cars already come close to meeting the performance level specified for September 1, 1978. Thus, major redesign to conform to the initial requirements would probably not be necessary."[1]

3. Probably the most important point of all, we observe that the auto manufacturers are now in the process of re-designing their cars to meet future energy requirements. From their own statements, the car of tomorrow must be smaller and lighter than today's highway population. The Highway Loss Data Institute's

1. Federal Register, Vol. 42, No. 37, Dated February 24, 1977

research reports, based on real-world experience on the highway, demonstrate that small cars are more frequently and more severely damaged than large vehicles. This being the case, an increase in the small car population as a result of national energy policy will have an adverse impact on the consumer and on the national economy unless substantial improvements are made in vehicle damageability.

4. Instead of delaying the 1980 implementation of the current standard, NHTSA would best serve the interests of consumers by retaining the 1980 effective date and by embarking immediately on additional proposed rule-making for the years beyond. NHTSA research already has demonstrated the feasibility of vehicle damage standards calling for improved damageability characteristics at higher crash speeds than today's minimal standard.

Any further delay in the implementation of the bumper standards, as is proposed, would subject automobiles to needless damage and their owners to financial loss. The technology needed to comply with the bumper standards was available in 1972, the year of the "Motor Vehicle Information and Cost Savings Act." Even better technology is available today, making it feasible to move beyond the minimal crash speeds specified in standards adopted in February 1976.

National Association of Independent Insurers

2600 RIVER ROAD, DES PLAINES, ILLINOIS 60018

312/297-7800

Arthur C. Mertz, President

May 5, 1977

Honorable Bob Eckhardt
Chairman, Consumer Protection &
Finance Subcommittee
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The National Association of Independent Insurers has a long and continuing interest in both motor vehicle safety and damageability. Therefore, we are pleased at the opportunity to join the American Mutual Insurance Alliance in urging prompt implementation of bumper standards under Title I and in ending the allocation of resources to Title II of the Motor Vehicle Information and Cost Savings Act.

NAII is a trade association of more than 600 property and casualty insurance companies, ranging in size from the smallest one-state companies to the very largest national writers. They are comprised of both stock and non-stock corporations. They reflect all forms of merchandising -- independent agency, exclusive agency, and direct writers. They include insurers which serve a general market and those which specialize in serving particular consumer groups such as farmers, teachers, government employees, military personnel, and truckers.

Sincerely,

Arthur C. Mertz

Arthur C. Mertz
President

Thank you very much, Mr. Chairman.

Mr. ECKHARDT. You disagree with the assumptions of the capability of the insurance industry to provide information under title II of the act relating to differences in damageability, crashworthiness and the ease of diagnosis and repair of automobiles. This I gather is largely because of the fact that claims are categorized as either collision or property damage and the latter includes extraneous information, as you referred to it.

Mr. MAISONPIERRE. This is one of the reasons.

Mr. ECKHARDT. In what way precisely is this information not useful? I mean, if it's available, and it is, can't it be weighted to give useful information?

Mr. MAISONPIERRE. Property damage liability settlements, Mr. Chairman, do not reflect the true damage to the car or the true costs of repairing the car.

Since liability concept is involved in the settlement of those claims, and quite often the settlement of these claims involve compromises, the exact nature of the true damages are remote and not reflected in the company files. Hence, these figures are likely to understate what the true damages in an automobile accident will be.

Mr. ECKHARDT. To understate them.

Mr. MAISONPIERRE. Yes, because property damage liability settlements are a compromise, so they will understate the actual damage.

Mr. ECKHARDT. I see. So most of the recovery is in personal injury and perhaps a personal injury recovery in a small accident may greatly exceed actual personal injury, but may be used to repair the car.

Mr. MAISONPIERRE. Either that, Mr. Chairman, or if we had a collision involving no personal injuries, but a questionable liability claim, the property damage liability claim will be compromised and will not be paid in full.

Mr. ECKHARDT. I understand that, and of course, there is no question but that there is a slippage between the information that you receive and what the actual repair cost is, but how about a comparison between makes and models? Wouldn't errors be in the same magnitude and would not, therefore, information of this type give you at least some comparative relationship between crash worthiness of different makes and models?

For instance, you have people driving Chryslers; they are not more litiguous with respect to their personal injury claims than people driving Chevrolets. There may be errors involved, but wouldn't the comparison still be useful?

Mr. MAISONPIERRE. It probably would give some rough idea, Mr. Chairman. Again, however, we have to recognize it takes a considerable amount of lead time to be able to capture enough information to be able to measure. As I said in our statement, it takes approximately 1 year before a model year performance can be analyzed, and by that time the public has just about bought all of the cars which are going to be manufactured by the auto manufacturers.

So this is the lead time necessary to gather real world experience, and it is a very troublesome factor, since we have to establish rates on a prospective base.

Mr. ECKHARDT. How is your argument here not always applicable to information gathered by the Highway Loss Data Institute? I think you feel that the Highway Loss Data Institute is something that has been useful.

Mr. MAISONPIERRE. I indicate, Mr. Chairman, it is providing us with valuable information. It has not as yet been used in the real world for insurance rating, pricing purposes.

One company at this time is looking into the feasibility of using the Highway Loss Data Institute material as a tool to develop rates for certain model cars.

Mr. ECKHARDT. Is that Allstate?

Mr. MAISONPIERRE. This is Allstate, sir; that is correct.

Mr. ECKHARDT. We had asked them to come to the hearing, but they have declined, and we would like to look into that question.

Mr. MAISONPIERRE. I might mention this is still in the development stage.

Mr. ECKHARDT. However, let us assume for a moment that the information gathered by the Highway Loss Data Institute may not be useful with repect to establishing precise levels of insurance coverage. Nevertheless, may it not be useful in obtaining certain information concerning a relationship between auto design and cost of repair?

Mr. MAISONPIERRE. Very much so, sir, and this is why we are saying we think the efforts of the private sector, the industry, through the insurance industry, has really replaced the need for title II.

Mr. ECKHARDT. You are saying this is a good thng, if it's done by industry and it is sufficient. But if the compilation of information is done through the Federal agency, it would not be useful, because it is already being done. What I am suggesting is that the Highway Loss Data Institute has the same problems with respect to utilizing and digesting information as would exist in connection with the Federal agency.

Mr. MAISONPIERRE. This is right. Here they will have the same problem in establishing differences between make and models on a prospective base, prior to the issuance of the model year.

Mr. ECKHARDT. But Mr. O'Neill said a moment ago that there was a remarkable continuity of rate of damageability amongst automobiles over several model years, that you could see patterns within certain makes and models that were not frequently altered.

Mr. MAISONPIERRE. There is a relationship between make and model. If one were to assume that a manufacturer were to substantially change some basic characteristics of the make and model, we could not assume than that the relationship which existed in the past will necessarily exist in the future.

Mr. ECKHARDT. I think that is true, and if one were to estabish rates on that basis, there would be some flaw in that procedure. At least there would conceivably be such. But let me touch on another question.

Mr. MAISONNPIERCE. Let me make one additional observation, Mr. Chairman. As Mr. O'Neill has indicated, the information secured through HLDI is receiving wide distribution and, of course, the Department of Transportation is receiving all of the materials

relevant to the HLDI data. There is no reason why the Department of Transportation could not use the HLDI data for its own purposes in establishing and publicizing for its own purposes what it believes to be differences by make and model.

Mr. ECKHARDT. That is one thing I really do criticize the Department for not doing. They have information available presently, and they are called upon under the act to utilize that information, and so as far as I know very little money has been expended for the purpose of putting into effect the provisions of title II.

I remember when we drafted title II I felt we didn't envisage as any major purpose the determination of actual rates as the result of this data, but rather some impelling influence on the automobile manufacturer who over a good number of years showed a bad record with respect to cost of repair of a vehicle.

For instance, not to make his automobile in such a way that, if you had a bump on the front fender, it would translate to the top, as we saw in one of the films a moment ago: or to not manufacture his automobile with a curve in the bumper that would actually itself do damage to the fender. Things of this nature, if revealed over a period of time, even though they might not be too useful either in establishing premium costs with respect to that models, nor with respect to advising the customer as to the current model, might nevertheless impel the manufacturer to improve those defects.

That seemed to me to be a very desirable purpose of the title, and I still don't see how that purpose has been in any way impugned by your testimony.

Mr. MAISONPIERRE. I agree with you, Mr. Chairman, that it was our feeling that this was really the objective of the title. It was primarily to attempt to influence the marketplace, influence people in their purchasing decisions.

Mr. ECKHARDT. Also influence the manufacturer in meeting the demands of the marketplace.

Mr. MAISONPIERRE. That is correct, sir.

The Department of Transportation, on the other hand, seemed to have interpreted its mandate differently, and this is the reason the Department tried so hard in the development, in its development of title II to attempting to establish on a prospective base what ranking should be given for each model and make of automobiles.

We believe that at this stage the data needs to implement the program whch you are contemplating and which you have just stated; the data needs are available. They are available through HLDI and they are being made available to the Department of Transportation, to the auto manufacturers, and to the public at large.

Mr. ECKHARDT. You do think, then, that DOT should do a study of the information whch is already available?

Mr. MAISONPIERRE. I think, Mr. Chairman, DOT should make use of the information presently available, and should not attempt to develop different or new systems, since we already have the tools at hand.

Mr. ECKHARDT. I think your testimony might lead us to reconsider the specificity of title II, but it would still seem to me that the

purpose of title II in formalizing data and in bringing it through some official agency that may not be considered to have a bias in favor of a particular manufacturer, or in favor of one industry as against another, is advantageous. Perhaps we are too specific in that section; perhaps we should state goals, and permit obtaining of data as a result of rules promulgated by the agency.

What would you think about that?

Mr. MAISONPIERRE. I would think that the Department of Transportation should be encouraged to use available data wherever possible.

Mr. ECKHARDT. You have been talking somewhat in terms of repealing title II. I am suggesting that title II has a useful function in requiring DOT to utilize data in the field, and without title II there is no congressional mandate to do so.

In fact, it seems to me that DOT has pretty much ignored the mandate of title II up to the present time by not using the data in the field that is being developed by the industry.

Mr. MAISONPIERRE. I would suggest, Mr. Chairman, that DOT has misinterpreted its mandate, and our proposal or our suggestion to repeal title II is based on the present conception of the mandate which DOT has as to what it should do with title II.

Mr. ECKHARDT. We believe strongly that DOT should make every effort to use whatever information is available to alert the purchasing public to provide information to the purchasing public, particulary today, in light of the drive toward smaller cars, as to what is and what is not a good buy. I have always thught of that as the major mandate of title II. Perhaps we need to look at it further.

Mr. MAISONPIERRE. I believe so, sir.

Mr. ECKHARDT. Thank you.

Mrs. Foldes, do you have anything?

Mrs. FOLDES. No, Mr. Chairman.

Mr. ECKHARDT. Title II also has another purpose besides that of advising consumers, it seems to me. That is giving DOT a reach to receive information obtained through the insurance industry that might be useful in further implementing the law.

For instance, title I deals with bumper standards. Perhaps that is a very inadequate kind of standard. That may be a very limited standard that should be further enlarged. Have we done everything necessary to try to insulate the door from damage as a result of bending the fender, danger that one of those films would indicate? If we could obtain other information from the insurance industry, we might be better equipped to know what is effective or what is desirable with respect to safety and damage reduction standards.

Would you not feel that that is another purpose and another reason why Title II might be useful?

Mr. MAISONPIERRE. Precisely, Mr. Chairman; this is the reason why the industry estabished what we call an all-industry committee representing all types and size of companies of to work with DOT in attempting to develop data systems which would provide DOT with more information useful in the development of standards, in the development of Title II. We worked very closely both with DOT and DOT's contractor, General Electric.

We tried different approaches. As it turned out, there were only two sources of information whch DOT thought ultimately might be

of some use. One was HLDI which has already been mentioned. The other one was the statistical organization known as the Insurance Services Office, whch gathers a lot of data and statistics for the insurance industry.

Both the Insurance Services Office and HLDI in conjunction with General Electric and DOT established a model data gathering system to assist DOT In capturing information which DOT thought might be useful in the development of title II. As it has turned out, DOT, through General Electir, felt that the information being captured was really not of substantial use to it.

However, let me emphasize the fact that DOT was considering prospective use of this information. But again, we have continued to operate through HLDI. We have broadened the base of HLDI, and as I said before, we have made this information available to DOT, and we have advised DOT on a continuing base that the information from the industry continues to be available.

Mr. ECKHARDT. Mr. Maisonpierre, your testimony has been, as usual, thoughtful and useful to the subcommittee, and we thank you.

Mr. MAISONPIERRE. Thank you very much, sir.

Mr. ECKHARDT. I understand Mr. Schroer and Mr. Noettl have planes to catch, and I will take you a little out of order at this time if that will convenience you.

Mr. Schroer, please?

STATEMENT OF BERNARD J. SCHROER, PH. D., ACTING DIRECTOR, JOHNSON ENVIRONMENTAL AND ENERGY CENTER, UNIVERSITY OF ALABAMA IN HUNTSVILLE, ACCOMPANIED BY JOSEPH F. PETERS, STAFF MEMBER AND PROJECT DIRECTOR OF AUTO CHECK

Mr. SCHROER. Mr. Chairman, I am the Acting Director of the Johnson Environmental and Energy Center.

To my immediate right is Mr. Joseph Peters, who is a member of the Center staff, and also project director of auto check.

I have been asked to testify on the findings and the benefits of our program.

The Alabama Motor Vehicle Diagnostic Inspection Demonstration project, which we call Auto Check, is one of five similar projects estabilshed by the Department of Transportation National Highway Traffic Safety Administration under the provisins of Title III of the Motor Vehicle Information and Cost Savings Act, Public Law 92-513. Auto Check is conducted by the University of Alabama in Hunsville for the Alabama Office of Highway and Traffic S afety. The original Federal grant was for $2,750,249 which was matched by State funds of $305,584 for a total of $3,055,833.

The grant was awarded on October 15, 1974. Automobile inspections began on March 19, 1975. Since then, 18,000 vehicles have received 30,000 inspections under three separate projects: The original demonstration project under Public Law 92-513; a University funded period of June 1, 1976 to December 31, 1976; and the project extension funded by Public Law 94-364 from January 1, 1976 to date.

The University inspection period was funded by an appropriation of $108,000 from the University's general fund. No Federal funds were expended on automobile inspections during this period.

The current project, beginning January 1, 1977, was authorized by Public Law 94-364 and by a grant of $225,000 from DOT and $121,7717 from the State of Alabama. Inspections under this extension will cease on September 30, 1977.

It is improtant to realize that our contract with NHTSA was to only collect data and to forward these data to NHTSA's data processing contractor. Our initial contract did not include any analyses of the data. The original project and the extension were designed by DOT to determine if the motorist could obtain necessary repairs at a lower cost if provided with specific or diagnostic inspectin data.

Half of the motorists received diagnostic inspection results. The other half received generalized results typical of a State vehicle inspection. After the automobile was was repaired it was again ispected to determine if the repairs had been properly accomplished. Repair cost data fuel and maintenance data were also requested from the motorists.

The results from the original project were reported in the Final Report, dated October 1, 1976. I would like to submit the executive summary of this report for the record.

Mr. ECKHARDT. How long is that?

Mr. SCHROER. I think it's 10 pages.

Mr. ECKHARDT. Without objection, it will be admitted to the record at this point [see p. 90].

Mr. SCHROER. Thank you.

Basically, we reported on the seven major items mentioned in title III of Public Law 92-513. In our opinion, diagnostic inspections are potentially cost effective. That is, the potential savings to the consumer are equal to or greater than the cost.

There are several aspects of the Auto Check project which I feel make it unique. First, the facility has been designed, constructed and equipped solely to support the demonstration program. The facility is easily accessible to the public by being on the university campus. The facility has specially constructed waiting rooms for educating the motorist during his wait, including a 30-seat minitheater and private rooms for interaction between the counselors and motorists.

A second unique aspect is that the project is supported by a staff of highly trained automotive specialists. The Chrysler Huntsville Electronics Division provides technical support personnel under contract to the university. These engineering specialists were responsible for training inspectors, maintaining and calibrating equipment, quality control of all data, and for general engineering support. As a result, the Auto Check project was able to provide the most accurate and meaningful data than any of the five projects.

A third unique aspect is that the project had the foresight to maintain its own computerized data base for storing all inspection results. As a result of several study contracts with DOT, the data base has been expanded to include motorist repair costs, accident records from the Alabama Department of Public Safety, and the

vehicle registrations from the County Vehicle Registration Department. This data base provides Auto Check with the capabilities for not only storing additional data, but for conducting a variety of consumer-related studies.

The results of the Auto Check inspections indicated that:

93 percent of the cars had at least an item failure on their first inspection;

34 percent failed brakes;

31 percent failed emissions

26 percent failed wheel alignment;

10 percent failed suspension;

2 percent failed steering;

These failures were reduced significantly on the second 6 months inspection.

I might make a note here: The State of Alabama does not have a mandatory inspection law.

The automotive repair industry in Alabama has demonstrated the capability to repair deficiencies found by a diagnostic inspection. The incidents of unsatisfactry repairs has decreased with the age of the project indicating that the consumer and repair industry are learning to work with the system. The availability to the consumer of an idependent inspection facility which makes after-repair inspections to certify the correctness of the repairs has been effective in reducing unsatisfactory as well as unnecessary repairs.

Most Vehicle-In-Use standards were found to be adequate. The test criteria for brakes system integrity were found to be too fatiguing for personnel involved in high-volume inspections. As a result of adjustment was made to the test criteria. The Original Equipment Manufacturer's specification for wheel alignment were found to be much too strict for practical vehicle safety inspection. Consequently, the Motor Vehicle Manufacturers Association specifications were found to be preferable. The road wheel shake test was found to be inadequate to identify all unsafe steering linkages. Minor changes to this test procedure corrected the problem.

Vehicle designs did not pose any serious problems for the inspectors. There was no significant interface problems between the vehicles and the inspection equipment.

It was not possible for Auto Check to explore the standardization of diagnostic systems and test equipment because the number of inspections required that the equipment be identical. Auto Check has three inspection lanes, each with identical equipment. This equipment allowed Auto Check to inspect 106 items on a car in 40 minutes. The counseling after the inspection and the administrative tasks extended the total time a consumer was in the facility to 1 hour.

The design of the Auto Check facility was found to be adequate and efficient. Each lane has the capacity of inspecting 76 vehicles per 8-hour shift or 228 for all three lanes. Since participation in Auto Check was voluntary, as Alabama does ot have a mandatory vehicle inspection law, the maximum capacity was never tested. However, during 1 day 76 vehicles were processed through one lane in an 8-hour shift.

Auto Check used University students as inspectors. These inspectors were part time employees working nly four hours a day. We believe that students make excellent diagnostic inspectors after a brief 2-week training period.

During the inspection period funded by the university we found that the consumer was willing to pay for the inspection. Surveys by an outside organization show that most were willing to pay $10 to $15 for an inspection.

Because of judicious management of th funds, the university was able to provide several significant analyses to DOT that were beyond the scope of the original agreement and at no additional cost to the Government.

All of these studies resulted from unsolicited proposals made by the university and approved by DOT. Only one study required committing additional funds of $58,225 to the project. The total value of these additinal tasks was close to $300,000, or 10 percent of the original grant.

These additional tasks were:

Effects of Auto Check on accident rates;

Effects of Auto Check on vehicle repair costs;

A number of consumer related studies of the Auto Check Project.

The university was awarded additional funding from NHTSA to evaluate the effects that Auto Check has had on the accident rate in the Hunstville area. The procedure was to compare the accident rate of the Auto Check vehicles with the accident rates of the uninspected vehicles. The Auto Check sample consisted of 7,750 cars. The uninspected sample consisted of 33,758 cars. These cars were involved in 3,019 accidents in the county for a 13-month period beginning in April 1975. I would like to briefly highlight the results:

First, the Auto Check cars had 12 percent fewer accidents than the uninspected cars. This difference is after the data were adjusted for sex, age and income. We were unable to isolate the reason for this accident rate reduction other than the possibility that the Auto Check participants are more careful drivers or that the vehicles were safer.

Second, our results indicate that 53 percent of the Auto Check cars which were involved in accidents were driven by females. This is the complete opposite of the national statistics that indicate males are ivolved in 71 percent of the accidents. As a result of this difference, we looked at the drivers of the Auto Check cars the year before the opening of Auto Check. We found that 55 percent of these drivers were males. This difference suggests that the principal driver of the Auto Check vehicle changed after it was inspected. For example, the husband lets his wife or daughter drive the car after it was inspected.

A third result is that by comparing the Auto Check participant with the driver in the accident, we found that the person who brings the car for the Auto Check inspection is probably not the principal driver. In most cases, the married middle-age male brought the car to Auto Check but he was not the principal driver. The exceptions are the single female and single male.

Fourth, the results indicated that an unexpectedly high accident rate for middle-aged females. This may be due to the large number

of mothers picking up their children after school. I should note that Huntsville has a minimal transportation system.

A fifth result which we were unable to validate is that the older uninspected cars had a higher accident rate than the older inspected cars. This suggests a dependency of the accident rate on the car's mechanical condition.

I might make a note that this study was only conducted on 1968 through 1973 cars.

The University also received NHTSA approval to evaluate the vehicle repair costs of Auto Check participants. A total of 3,567 repair actions associated with the engine, brake, alignment, suspension, and steering systems were analyzed. These repair actions represented $76,532 in repairs to 2,062 vehicles. Each repair action was categorized as being a required repair—that is it failed the Auto Check inspection—a recommended repair, an optioinal repair, or an unnecessary repair.

I would like to summarize the results of this study:

First, 24 percent of all repair actions were unnecessary, that is repairs to non failed items. Also, 32¢ of every dollar was spent on unnecessary repairs.

Second, 36 percent of the suspension, 30 percent of the engine, 24 percent of the brake, and 9 percent of the alignment repair actions were unnecessary.

Third, 28 percent of tire dealer, 27 percent of service station, 26 percent of chain stores, 24 percent of car dealer, 24 percent of independent garage, and 19 percent of owner repairs were unnecessary.

Fourth, the unnecessary repair rate was significantly higher for female than male participants, 27 versus 24 percent.

Fifth, females also spent statistically more for unnecessary repairs than males—38 cents versus 30 cents.

Sixth, the unnecessary repair rate was the same—24 percent—for both the control and diagnostic groups.

The most significant finding of the study is that there appears to be a learning function operating during the lifetime of the Auto Check project. A substantial decrease was noticed over time in the rate and cost of unnecessary repairs. In 13 months the rate of unnecessary brake repairs decreased 30 percent. The rate of unnecessary engine repairs decreased 50 percent.

This learning effect could be a result of improved communication between Auto Check, the consumer, and the repair shop. Or, this learning effect could be a result of better understanding by the repair shops of the Auto Check Inspection Form. A third factor could be a change in the attitudes and practices of the repair industry.

Our estimates are that the consumer who had his car inspected at Auto Check is saving, on the average, $2 in unnecessary brake repairs and $3 in unnecessary engine repairs.

Consumer Aspects of the Auto Check Project.

A number of consumer-related studies were also approved by NHTSA and are discussed in detail in our final report.

I would like to briefly summarize the findings of one of these studies. This study consisted of interviewing Auto Check partici-

pants in an attempt to identify how they would relay our inspection results to the repair industry.

The results were:

The more items that fail in the inspection the greater the change that the motorist will give improper repair instructions to the repair shop.

The more items that fail in the inspection the greater the chance that the motorist will not show the inspection form to the repair shop.

These results indicate that even though the consumer has the detail inspection results he still may have unsatisfactory or unnecessary repairs done. The problem is to get the consumer to use the inspection results. The interviews indicated that the main areas of consumer confusion and potential improper repair appears to be engine repairs and brake repairs.

AREAS OF ADDITIONAL STUDY

The primary thrust by NHTSA on the title III demonstration program has been at providing data relevant to the actual inspection process, especially in the areas of diagnostic equipment design and reliability and facility efficiency and operation. Significant data have been collected to address these areas.

It is our opinion that two things must be done before any meaningful conclusions can be reached. First, very little analyses have been done by NHTSA on the data from the five projects. The only exception is the several studies that we have conducted at Auto Check. Additional studies should be made to completely analyze already collected data, especially regarding the consumer aspects.

Some of the analysis which should be done on the existing data are:

1. Vehicle outage rates should be computed by critical system component and mileage. Here the American Association of Motor Vehicle Manufacturers has expressed an interest to us for these data.
2. Unsatisfactory repairs should be analyzed. These results should be compared with other facilities such as the AAA facility in Missouri.
3. Emissions of cars with catalytic converters should be analyzed. Here the auto manufacturers and the Motor Vehicle Manufacturers Association have expressed an interest to us in this area.
4. More detailed analyses of repair costs should be done. Here the Federal Trade Commission has expressed an interest.
5. The extent to which the method of mechanic payment has on unnecessary repairs should be analyzed.
6. The extent to which the certification of mechanics has on unnecessary repairs should be analyzed.
7. The inspection results should be compared with NHTSA's vehicle defect and recall information.
8. The analysis of what is the optimum time between inspections should be made.
9. The evaluation of consumer acceptance of Auto Check should be analyzed. We are currently asking all motorists to complete a

questionnaire upon enrolling and after returning for repair inspection.

Second, it is our opinion that there are a number of relating factors which must also be addressed before terminating the demonstration program. Most of these factors are consumer-related and are most critical before considering national mandatory inspection legislation.

I would like to briefly describe several of these factors. One is the consumer interface with the inspection facility. Our studies have shown that too much diagnostic information can be given the consumer. Experiments must be conducted to reduce this problem. For example, one experiment that we are doing is the use of prescription form similar to the doctor's prescription where we attempt to prioritize those safety-related items requiring immediate attention.

A second factor which must be addressed is the consumer interaction with the repair shop. The consumer should be armed with the necessary information to effectively communicate with the mechanic. Equally important, the consumer should be convinced to actually relay this information to the mechanic. Our studies have shown that many of the consumers do not use the forms and do not tell the shops the results of the inspection or the items which failed. Experiments must be conducted addressing this problem.

Many billions of dollars are spent each year replacing good automotive parts. Many parts are replaced in the name of preventative maintenance or overall economy. Information about the lifetimes of commonly replaced parts could significantly reduce the cost of unnecessary repairs, save the country's resources, and reduce energy consumption. Experiments must be conducted addressing this problem.

One area of public education would be the publication and dissemination of the lifetimes of expendable automotive components. Discrepancies exist in the lifetimes of these products. For example, a major manufacturer of spark plugs recommends replacement every 10,000 miles. However, General Motors recommends replacement every 22,500 miles on its new cars.

From our studies we believe that a large percentage of spark plugs, shock absorbers, and air filters are being replaced with many miles of useful service still remaining. One would expect that the averge life of a car would increase or the depreciation rate would decrease in a diagnostic inspection program. The Auto Check period of operation has not been long enough to determine if these factors do exist.

The performance of the automotive repair process depends on three factors: the mechanical condition of the vehicle and the quality of the diagnostic inspection, the knowledge of the person doing the repair, and the unconscious desire of the repairer to take advantage of the consumer (avarice). NHTSA has been primarily addressing the first factor, the mechanical condition of the car and the diagnostic inspection. Of more importance to the consumer, especially in terms of unnecessary and unsatisfactory repairs, are the knowledge of the person doing the repair and the unconscious desire of the repair shop to take advantage. Experiments must be

conducted addressing this problem. Our studies have shown that 24 percent of all repairs are unnecessary. This amounts to 32 percent of the total repair bill.

We have submitted proposals to NHTSA addressing these problems. To solve these problems we feel that additional inspections are required and that the demonstration program be extended for a minimum of 2 years to further investigate consumer benefits. Follow-on inspections must include new models with their design changes and innovations. The learning process for the repair industry and the consumer must be allowed to continue until it stabilizes. This is most critical to assure meaningful information for the Congress.

[The following material was received for the record:]

EXECUTIVE SUMMARY

FINAL REPORT

ALABAMA MOTOR VEHICLE DIAGNOSTIC
INSPECTION DEMONSTRATION PROJECT

"AUTO CHECK"

Prepared For
Department of Transportation
National Highway Traffic Safety Administration

Prepared By
Auto Check Staff
of the
Center for Environmental and Energy Studies

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE
P. O. BOX 1247
HUNTSVILLE, ALABAMA 35807

Contract Number DOT-HS-5-01056

October 1, 1976

II. EXECUTIVE SUMMARY

A. Program Background and Objectives

The Alabama Motor Vehicle Diagnostic Inspection Demonstration Project, known locally as Auto Check, was established by Cooperative Agreement DOT-HS-5-01056 dated October 29, 1974 under the provisions of Title III of the Motor Vehicle Information and Cost Savings Act, Public Law 92-513. This demonstration project was one of five such projects established by the Department of Transportation. The project was administered by the Governor's Coordinator, Office of Highway and Traffic Safety, (OHTS) and assigned to The University of Alabama in Huntsville with technical support provided by a team from the Chrysler Huntsville Electronics Division (CHED).

B. Goals and Objectives

1. The primary goal in the overall project design was to provide for effective accumulation of data to determine if a national diagnostic motor vehicle inspection program would be cost effective in the sense that public benefits would exceed the program costs. The stated purpose was to obtain data in the following seven areas:

   - o The relative costs and benefits of the project.
   - o The capability of the motor vehicle repair industry to correct diagnosed deficiencies or malfunctions and the cost of such repairs.
   - o Vehicle-in-use standards and feasible reject levels.
   - o The efficiency of facility designs employed.
   - o The degree of standardization of diagnostic systems and test equipment.
   - o The development of diagnostic testing equipment designed to maximize the interchangeability and interface capability of test equipment and vehicles.
   - o Vehicle designs which facilitate or hinder inspection and repair.

2. Project Objectives

- o To design and build an efficient diagnostic inspection facility.
- o To develop and implement a public awareness program encompassing the project's benefits, purposes, and goals.
- o To devise and implement a data collection, recording, and storage plan.
- o To develop and implement a participant recruitment and education program which would assist in meeting project goals; such as, repair cost determination, accumulation of maintenance and operational data and periodic return inspection requirements.
- o To develop and implement a participant counseling and retention program.
- o To develop and implement a project management information system which included the entire inspection record so that records could be maintained and special studies could be performed.
- o To develop and implement a quality control program.
- o To coordinate with the Alabama Department of Consumer Protection and Air Pollution Control Commission.

C. Community Description

The city of Huntsville and Madison County comprise the third largest metropolitan area in Alabama with a population just under 200,000. The 1975 Madison County vehicle registration list indicated that there were 90,500 passenger vehicles, of which 48,500 were eligible for the Auto Check inspection.

There is no statewide Periodic Motor Vehicle Inspection (PMVI) in Alabama. In January 1976, the state Tire Safety Law went into effect. In October 1975, Redstone Arsenal required that all vehicles obtaining permits to operate on the arsenal had to pass a vehicle inspection.

D. Work Accomplishment Summary

The time of the grant (Cooperative Agreement) and the urgency to start inspecting vehicles in order to acquire sufficient data dictated the use of a temporary inspection facility. The first vehicle inspections occurred on February 28, 1975, approximately 120 days after the grant award. The official opening inspection day was on March 19, 1975.

The permanent facility, a one story brick structure, was completed in October 1975. The project maintained the quality and quantity of data acquired during the transition period. The vehicle inspection equipment was moved one lane at a time to avoid any impact on production.

Auto Check perceived that diagnostic automobile inspections could be accomplished with personnel not trained in automobile mechanics. Therefore, the project had a majority of students as vehicle inspectors supervised by skilled automotive mechanics. The initial training consisted of classroom and diagnostic equipment training with subsequent training based on critical areas determined through the project's quality control program. It was proven that this type of training can be utilized to select personnel to work in a state directed diagnostic inspection program. This information on inspector qualifications is considered unique and valuable output of the Alabama project.

The quality control plan had three major divisions: error prevention, error detection, and data collection and analysis. Daily audits functioned to verify that data generated was valid.

1. Vehicle Processing

   The diagnostic and control automobile inspections were identical; only the information transmitted to the participant was different.

   The vehicle was left at the entrance of the facility. Inspection of 16 subsystems covering over 100 separate items was accomplished.

2. Participant Counseling

   The participants were divided equally into a diagnostic and a control group for the demonstration of the value of diagnostic information. Each participant was counseled about the

inspection results. The diagnostic group received all the inspection data. The control group received condensed (simplified) inspection data. This technique permitted the creation of two levels of information transfer retaining one level of inspection data from all vehicles for use in the project data bank.

Participants returning for an after-repair inspection provided the counselor with specific repair cost information. The participant was counseled on the quality of repairs as determined by the inspection.

3. Methods for Attraction and Retention of Participants

Alabama did not have a mandatory motor vehicle inspection law. Therefore, Auto Check was dependent upon volunteer public participation which was encouraged by mass media advertising, personal contact, incentive programs, and retention procedures.

Public response was gratifying in that approximately 28% of the eligible vehicles in the area were inspected at least once at Auto Check.

Retention practices were given much emphasis to encourage participants to return for a second periodic inspection. Methods were continually developed to retain more people in the program. The most effective retention methods were personalized letters and telephone calls.

E. Summary of Results and Project Impact

1. Inspection Results

During the period of performance, Auto Check accomplished 24,748 inspections on 15,269 vehicles (28% of the 48,500 vehicles eligible). Second periodic inspections totaled 3,869 and third periodic inspections totaled 305. After-repair inspections totaled 5,305.

After-repair inspection failure rates for the diagnostic group were significantly lower than the corresponding rates for the control group, indicating that a higher quality of repair occurred when diagnostic information was available. In addition, the after-repair inspection failure rate decreased between the first and second periodic inspection periods, implying that both the repair industry and the public were learning how to

use the diagnostic information more effectively. The extent of this time related learning process has not been fully ascertained.

2. Cost and Benefits

The cost of a diagnostic inspection has been estimated to be $15.00 per inspection by a UAH economics professor who assumed near optimum operating conditions (720 inspections per week).

Balancing these cost to the consumer are the following observed or potential benefits of diagnostic inspection:

- o Reduced overmaintenance of engine ignition systems
- o Improved gas mileage
- o Reduced cost of repairs
- o Increased quality of repairs
- o Improved tire life due to proper wheel alignment
- o Improved vehicle safety with a corresponding reduction in accident rates - over 85 percent of the vehicles in this area have safety related defects.

3. Facility Efficiency

The Auto Check Facility design allowed a sustainable vehicle inspection production rate of 76 vehicles per day per lane (228 per day total). The maximum rate attained was 92 vehicles per lane per day.

4. Vehicle-In-Use (VIU) Standards

Certain Vehicle-In-Use (VIU) standards were felt to be in need of modification because:

- o The brake system integrity test was too fatiguing for the inspection personnel.
- o The brake system dynamic tests should use a failure criteria of 30 percent imbalance to avoid spurious brake system rejections.

- o The precise Original Equipment Manufacturers (OEM) specifications for wheel alignment were much too strict for practical vehicle safety inspection. The more tolerant Motor Vehicle Manufacturers Association (MVMA) specifications were preferable.

- o The road wheel shake test was not adequate to identify all vehicles with unsafe steering linkages.

When the preceeding minor changes were made the VIU standards, reject levels were quite satisfactory.

5. Vehicle Designs and Equipment Interface Compatability

Some minor vehicle design characteristics that positively or negatively impacted the inspection process were noted. The most significant design that hindered inspection were the splash shields on disc brakes that made brake lining inspection impossible.

6. Project Impact

- o Repairs accomplished for diagnostic group participants were more successful than for control groups.

- o Quality of repairs for both groups increased between repetitive inspection cycles (six months apart).

- o Cost of repairs decreased between repetitive cycle.

- o Compatible working relationships developed between the local repair industry and the project.

Repair prices, in most cases, appeared reasonable for what was repaired but in many cases more items were repaired than those which were found to be faulty. However, much of the "over repair" or additional repair could be considered prudent.

7. Consumer Awareness and Automotive Maintenance Practices

- o 28 percent of the available vehicles were enrolled in the program.

- o 80 percent of the participants found the inspection very helpful.

- o A significant fraction of the participants would not give the inspection form to the repair facility.

Data acquired shows that the public probably over-maintains vehicles in the area of engine ignition system. However, 83 percent of the vehicles inspected had their carburetors adjusted to a richer idle mixture ratio than the vehicle manufacturers recommended.

8. Special Studies

Eighteen special studies were performed to understand facets of the program that were not anticipated at the initiation of the program. Highlights of some of these studies indicated that:

- o Published repair industry brake cylinder repair practices deviate critically from the recommendations published by the automobile manufacturers.
- o The number of items found to need repair on a participant's vehicle affected his decision to get the repairs made and the probability of getting these faults repaired properly.
- o The most misunderstood areas of the vehicle on the part of the participant were the engine and the brake systems.
- o The primary reasons for a participant not returning were that he did not understand all that was required of him or that the vehicle faults were so minor that he felt that an after-repair diagnostic inspection was unnecessary.

F. Recommended Program Improvements & Potential Future Applications

The recommendations or suggestions for similar future projects may vary considerably depending on whether the future operation is to be an experimental demonstration program following the original National Highway Traffic Safety Administration (NHTSA) program guidelines or a state directed pilot diagnostic project. Therefore, information for both types of future projects is presented.

1. Program Feasibility

The feasibility of future motor vehicle diagnostic inspection projects was partially demonstrated by the Alabama

project. There were many positive indications that public diagnostic vehicle inspection was both desirable and potentially cost-effective. This situation may be briefly summarized as follows:

- Over 90% of the vehicles failed one or more items on initial inspection.
- Over 35% of the vehicles failed critical safety items inspected (tires, wheels, and brakes).
- Voluntary public participation resulted in the enrollment of 28% of the eligible vehicles.
- The local repair industry failed to make satisfactory repairs in 16% of their attempts.

These results indicate that the motor vehicle population was not maintained in good mechanical condition; there was considerable public interest in diagnostic inspection; and the repair industry needed to be monitored to improve the quality of their work. If the diagnostic inspections could save 25% of the money spent on unnecessary vehicle repairs an annual average saving of $25 per automobile would be achieved. The cost of a typical commercial inspection is $25. Since a state-directed mandatory inspection should be less costly, the potential future cost-effectiveness in repair/maintenance savings alone appears attractive.

Cost-benefit values for other categories such as extended vehicle life and improved trade-in value require more time than was available to this project.

2. Program Implementation

If the subject future program were an extension of one or more of the original NHTSA-managed demonstration programs, the program should continue to be Federally financed because the primary goal of such programs would be information acquisition. The future program or extension would continue to require consumer input from the public as well as technical data. In order to secure maximum participation, the inspection should continue to be provided at no cost and be voluntary. The NHTSA "control" group should be discontinued.

If the future diagnostic inspection project were to be a state directed operation intended for eventual state-wide application, participation should be mandatory and costs assigned as part of the license fee.

As indicated earlier the inspection cost is anticipated to be less than $25. The actual amount will vary according to the extent of the inspection and the utilization of the facility. Operation should be for more than 40 hours per week including evenings and Saturdays.

In order for a future program to be successful, repair of critical safety items such as wheels, tires, and brakes should be mandatory but repair of the rest of inspected items should be optional. Auto Check participants demonstrated a marked preference to repair those vehicle deficiencies that they felt were most important. This approach recognizes a difference between safety and optional consumer benefits.

3. Project Staffing

To continue an experimental demonstration project productive, flexible and innovative staff members would be needed. If a regular state mandatory inspection program were planned, the concept of a scientific data acquisition project would change to that of routine inspection. Therefore, the project director post could be filled by a person whose experience was in managing routine state operations involving regular public interface, scheduling, and office management. A person experienced in automotive technology would be needed as a site supervisor, or, if it were a small facility, as the project director. It would be likely that the other positions could be filled by proper selection of existing state job descriptions.

4. Equipment and Facility Design

The equipment selection and arrangement of the Alabama project was proven satisfactory; high throughput capability was demonstrated and all but minor bottlenecks at individual stations were eliminated.

If a state-directed mandatory inspection project were planned, the equipment selection and arrangement would depend on the space available (existing facilities) and the items to be inspected. If it were assumed that a new

facility would be built and similar inspections accomplished, the equipment used should be similar to that at Auto Check.

5. Project/Participant Interface

For a follow-on type program, Alabama would continue the proven methods of participant recruitment and interface. Elimination of the "control" category and accepting later model vehicles would improve the interface. Counselors would provide "prescriptions" priortizing recommended repair actions on a safety basis. If a state funded program were planned, some counseling would be advisable. This should be done by Certified General Mechanics, identified as such to the public to gain their confidence in the inspection reports and subsequent advice.

6. Project/Repair-Industry Interface

In order to effectively continue an inspection demonstration type project, or a state directed project, the repair industry interface must be improved. A free 10-hour orientation course given at the project to repair mechanics is recommended.

Service managers and shop owners should get project reports showing areas of high repair failure and/or disputed failure criteria. Some of these interface problems could then be resolved by mutual agreement.

7. Participant/Repair-Industry Interface

The improved data transfer to the participant and the utilization of prescription prioritizing recommended repair action will provide confidence in the inspection results. It is recommended that additional effort be placed on educating the participant to transmit these inspection results to the repair industry. Both the participant and the repair industry should be urged to report any apparent problem to the project. This effort, combined with the additional education recommended for the repair industry, will result in additional benefits to the consumer.

G. Major Conclusions

1. A major requirement for the success of future diagnostic type PMVI centers is recognition of the importance of the interface between the diagnostic center and the public. An information transfer system must be developed that considers the public philosophy on the importance of automotive repairs. If this were done, public confidence in and use of diagnostic PMVI services would improve and be more acceptable to the public.

2. There appear to be no major technical barriers to functional implementation of diagnostic automobile inspection for the general public.

3. The cost of some of the current types of diagnostic equipment makes it impractical for general use in the automobile repair industry. In addition, there are maintenance and calibration problems.

4. Preliminary cost projections indicate that a similar inspection to those now provided commercially at $25 can be provided at a lesser cost, perhaps $15, in a public inspection facility.

5. The optimum design of future PMVI facilities should include consideration of these key features of the Alabama project.

   (a) A facility design that permits near-optimum use of inspection equipment through proper manning of inspection stations and minimization of bottlenecks to vehicle throughput.

   (b) The staffing and operational plan that uses a combination of supervision, training, and quality assurance to permit the effective use of inspectors not trained in automobile mechanics.

   (c) A computerized data bank and library of special project studies that provide a comprehensive insight of inspection statistics, participant characteristics, and other information that would be invaluable to diagnostic project design.

UAH REPORT NUMBER 195

A COMPARISON OF THE ACCIDENT RATES OF AUTO CHECK VEHICLES VERSUS UNINSPECTED VEHICLES

Prepared for

Department of Transportation
National Highway Traffic Safety Administration

Prepared by

Bernard J. Schroer
William F. Peyton
Auto Check Staff
Center for Environmental and Energy Studies
The University of Alabama in Huntsville
P. O. Box 1247
Huntsville, Alabama 35807

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EXECUTIVE SUMMARY

The accident rate of Huntsville vehicles inspected at the Alabama automotive diagnostic inspection facility (Auto Check) was significantly lower than the Huntsville vehicles not inspected at Auto Check. The thirteen-month accident rates were:

Uninspected Vehicles	%	Auto Check Inspected Vehicles	%	Percent Reduction
Unadjusted	7.945	Unadjusted	6.985	12
Adjusted for Auto Check Contamination	8.039	Adjusted for sex and age	6.839	15
		Adjusted for sex, age and ZIP	7.067	12

The above adjustments indicate that the Auto Check sample had a relatively higher percentage of drivers in the high accident prone sex/age groups and a relatively lower percentage of drivers from the sections of the city with higher accident rates than the uninspected sample.

A number of statistical tests were conducted to determine if the Auto Check sample and the uninspected sample possessed similar characteristics. These tests included comparisons of driver age, occupation, ZIP

code, and vehicle age. The results of these tests are:

- No significant difference was found in the age distributions of male and female drivers of inspected vehicles involved in accidents and the age distributions of male and female drivers of uninspected vehicles involved in accidents.

  However, a significant difference was found in the age distributions of the drivers of inspected vehicles involved in accidents and the age distributions of the drivers of these vehicles the year before being inspected by Auto Check. This difference suggests that either the principle driver of the inspected vehicle changed after being inspected, such as the husband now letting the wife drive the vehicle, or that a large percentage of the Auto Check vehicles were purchased just prior to being inspected.

- No significant difference was found in the occupations of male and female drivers of the inspected vehicles involved in accidents and the occupations of male and female drivers of the uninspected vehicles involved in accidents.

- No significant difference was found in the contributing circumstances surrounding the accidents of inspected vehicles and the circumstances surrounding the accidents of uninspected vehicles.

- No significant difference was found in the distribution of accidents by vehicle year for the inspected and uninspected vehicles involved in accidents.

- A significant difference was found in the distribution of accidents by driver ZIP codes for the inspected and uninspected vehicles involved in accidents.

- No significant difference was found in the comparison of accident rates for the control and experimental groups within the Auto Check program.

In addition to the above statistical inferences, no difference was noticed in the defects observed in the vehicle equipment at the time of the accident for the inspected and uninspected vehicles.

A comparison of the Auto Check participant with the driver involved in an accident indicates that the person bringing the car to Auto Check for the first periodic inspection is probably not the principal driver. There are several exceptions. If a single male or female brings the car to Auto Check, he or she, respectively, is probably the principal driver. If a married female brings the car to Auto Check, she also is likely to be the principal driver, but not as likely as had she been single.

The national statistics indicate that males are involved in 71 percent of the accidents. The City of Huntsville statistics indicate that males are involved in 66 percent of the accidents. However, for the Auto Check sample, males were involved in only 47 percent of the accidents while for the uninspected sample males were involved in 56 percent of the accidents. An analysis of Auto Check vehicles involved in accidents the year before being inspected by Auto Check indicated that males were involved in 55 percent of the accidents. These results suggest that females may be the principal drivers of 1968 through 1973 vehicles inspected by Auto Check.

The accident rates for the various Huntsville ZIP codes indicate that those areas typified by a higher education and income have lower accident rates than the less educated, poorer areas. In addition, many

of those areas of higher education and income appear to have a greater accident rate reduction after having their vehicles inspected which suggests that the individuals in those areas were more willing or able to have their vehicles repaired.

Within the 1968 through 1973 vehicle model years the data suggest that older, uninspected vehicles are more likely to be involved in an accident. However, for the inspected vehicles, the older vehicles are less likely to be involved in an accident. Although no statistical inferences were made, these data suggest a strong dependency of the accident rate on vehicle mechanical condition.

An anomoly in the accident rate for the 1968 model year suggests that there is likely to be a hierarchy in the age of vehicle driven by each member of a household in multi-car families. The newest vehicle may be driven by the male head-of-household while the second newest vehicle may be driven by his wife. The oldest vehicle is likely to be driven by his son or to be resold.

An unexpectedly high accident rate was observed for middle-aged females. A review of accident rates for time of day, day of month and month of year strongly indicates that this high accident rate may be due to the large numbers of these middle-aged females that are on the road after they have picked up their school children (The local public transportation system transports only a small percentage of the school children.). A traffic survey performed during this high accident rate period indicated that the middle-aged females are an inordinately high percentage of the drivers during this critical period.

UAH REPORT NUMBER 197

AN EVALUATION OF VEHICLE REPAIR COSTS FOR AUTO CHECK PARTICIPANTS

Prepared for

Department of Transportation
National Highway Traffic Safety Administration

Prepared by

Auto Check Staff
Center for Environmental and Energy Studies
The University of Alabama in Huntsville
P. O. Box 1247
Huntsville, Alabama 35807

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EXECUTIVE SUMMARY

A total of 3,567 repair actions associated with the engine, brake, alignment, suspension, and steering systems were analyzed from the data collected by the Auto Check automotive diagnostic facility. These repair actions represented $76,532 in repairs to 2,062 vehicles. Each repair action was categorized as being a required repair based on the results of the Auto Check inspection, a recommended repair, an optional repair, or an unnecessary repair.

The most significant result of this study was the detection of a substantial decrease in the rates and costs of unnecessary repairs during the lifetime of the Auto Check program. This decrease may be attributed to the local repair industry learning to adapt to the Auto Check inspection process. During the lifetime of the program, the rate of unnecessary brake repairs decreased from 32 percent to 22 percent. The rate of unnecessary engine repairs decreased from 41 percent to 22 percent. Likewise, the amount of the participant's dollar spent on unnecessary brake repairs decreased from 40 cents to 20 cents. Also, the amount spent on unnecessary engine repairs decreased from 59 cents to 19 cents.

The following observations are averages for the entire lifetime of the Auto Check project:

- 24 percent of all repair actions were unnecessary.
- 32 cents of every dollar was spent on unnecessary repairs.

- At the system level, 36 percent of the suspension, 30 percent of the engine, 24 percent of the brake, and 9 percent of the alignment repair actions were unnecessary.

- By repair facility, 28 percent of tire dealer, 27 percent of service station, 26 percent of chain, 24 percent of car dealer, 24 percent of independent garage, and 19 percent of owner repairs were unnecessary.

- At the system level, 39 cents of every dollar spent for engine, 39 cents of every dollar spent for suspension, 31 cents of every dollar spent for brake, and 9 cents of every dollar spent for alignment repairs were unnecessary.

- By repair facility, 38 cents of every dollar spent at service stations, 37 cents of every dollar at car dealers, 36 cents of every dollar at chains, 35 cents of every dollar at tire dealers, 34 cents of every dollar at independent garages, and 17 cents of every dollar the owner spent repairing the vehicle himself were unnecessary.

- 33 cents of every dollar the control group spent for repairs and 31 cents of every dollar the diagnostic group spent for repairs was unnecessary (not statistically significant).

- The unnecessary repair rate was significantly higher for female than male participants (27 versus 24 percent).

- Females also spent statistically more for unnecessary repairs than males (38 versus 30 cents).

- The unnecessary repair rate was the same (24 percent) for both the control and diagnostic groups.

The detailed statistical analyses of engine repairs indicated that:

- Thirty-nine cents of the repair dollar for engine repairs was unnecessary.

- Uninformed females spent more on unnecessary engine repairs than on legitimate repairs. However, informed females had comparable unnecessary repair costs to that for the informed males.

- Males performing their own engine repairs had a significant lower unnecessary repair rate than those males who had their repairs made commercially (21 percent versus 34 percent).

- Both males and females in the diagnostic group had a lower unnecessary repair rate than the control group. However, this difference was not significant and can be primarily attributed to the independent repair shops having a much lower unnecessary repair rate for the diagnostic group (30 percent versus 42 percent for the control group).

- The females in the control group had a significantly higher percentage of unnecessary repair in excess of $40.00 as compared with the other groups. This suggests that the uninformed female having the vehicle's engine repaired is likely to have an excessive repair bill since she is less able to interface with the repair facility on an intelligent level. On the other hand, if the female has information suggesting that she could verify the repair shop's conclusion, she is not as likely to have an excessive repair bill.

The detailed statistical analyses of brake repairs indicated that:

- Females had a significantly higher rate of unnecessary repairs than males (29 versus 23 percent).

- Tire dealers had a significantly higher rate of unnecessary repairs than the other repair facilities (38 versus 25 percent).

- Owners performing their own repairs had a significantly lower rate of unnecessary repairs than the commercial facilities (16 versus 25 percent). Also, 74 percent more owners performed their own repairs when they were given diagnostic information.

Summary of Evaluation of Participant Interfaces

1. The early participant profile indicated that maximum cooperation was obtained from middle-aged males owning full-size AMC products. The minimum cooperation was obtained from youthful drivers owning (driving) sporty GM vehicles (Camero, etc.).

2. After the initiation of television advertising, a shift in the participant profile occurred wherein more youthful drivers entered the program.

3. Telephone solicitation reminding participants to return for a repair or second periodic inspection had a 44 percent success rate for repair inspections and a 53 percent success rate for second periodic inspections. Because the telephone solicitations were made after the effected participants had not responded voluntarily or to mailed letters, those individuals making appointments subsequent to the telephone call can be considered to be the "hard cases."

4. The primary reasons why participants did not return were:

   a. They felt that they had to have all repairs made,
   b. They had not kept up-to-date records of maintenance,
   c. Only minor items that did not require diagnostic equipment needed attention.

5. The 25 dollar repair reimbursement to those hard-to-get vehicles with critical repairs was very successful; 80 percent of those offered the incentive accepting it. Personal letters to owners who had, so far, resisted project efforts to enroll them had a 10 percent response.

6. Participant education in the form of a slide presentation was good; greater than half of the participants attended. A static presentation was ineffective.

7. A problem exists in informing the public as to the proper repair instructions regarding the engine and brake systems. One third of the participants having one or the other of these systems at fault did not understand what should be done.

The interviews conducted simulating the participant/repair industry interface indicated that:

1. The more items that are found wrong with a vehicle, the more likely that not all items will be repaired.

2. The more items that are found wrong with a vehicle, the less likely that the participant will use the Inspection Form to communicate with the repair industry.

3. The more items that are found wrong with a vehicle, the more likely that the participant will use his memory of the counseling session in communicating with the repair industry.

4. The above effects were quite noticeable when four or more items were found faulty on the vehicle. Because 27 percent of the vehicles have four or more faults, their owners generally had trouble communicating with the repair industry and they were more likely to have an inadequate or faulty repair performed than those drivers of vehicles with fewer faults.

The participants were also interviewed about their beliefs regarding the interval allowed between engine tune-ups. The Auto Check participants probably overmaintain their vehicles in this respect.

Regardless of the capability of the participants in their communication with the repair industry, the repair industry has shown a capability of learning in interpreting the Inspection Form. This learning was reflected by lower costs and better repairs for the treatment group during the latter stages of the program.

Mr. ECKHARDT. In each of the areas for which information was to be provided to the Secretary of Transportation under section 302(b) of this act, what studies could be done from the information contained in your computer bank?

Dr. SCHROER. If you remember my testimony, I included nine areas that we think could be addressed using our data bank.

Mr. ECKHARDT. Yes.

Dr. SCHROER. I would be more than happy to repeat these. We think, for example, the vehicle outage rates should be computed by a critical system by component, by mileage. Unsatisfactory repairs should be looked at. Emissions of cars with catalytic converters should be analyzed. We think additional studies should be done on the repair cost data, especially looking to dividing the repair cost, comparing repair cost of, let's say, those mechanics that are certified against those mechanics that are not certified.

Mr. ECKHARDT. I recall your listing of them now, but I would like to ask you this: How many of those that DOT requested from you is DOT doing on its own?

Dr. SCHROER. I think probably the administrator of NHTSA could address that more correctly than I can.

Mr. ECKHARDT. Perhaps you wouldn't know, but I wondered how many has it requested of you.

Dr. SCHROER. Based on my knowledge, NHTSA has done very little analysis of the existing data.

Mr. ECKHARDT. DOT itself has contracted out an analysis which draws much less specific conclusions than yours, especially as regards consumer benefits in the area of repair costs and reductions. Comparing the costs of treatment group participants and control group participants, this analysis yields basically indeterminate results. Yet your study of unnecessary repairs shows a dramatic reduction in both groups.

Could you please comment on the different methods employed in these two analyses?

Dr. SCHROER. Yes, Mr. Chairman, The method that we used for abstracting the repair cost data I think was probably significantly different from the method used by the NHTSA support contractor did their analysis. We used a team approach consisting of three individuals. The first individual was a senior parts man, who had considerable experience in the parts industry. The second man was a senior mechanic person who had considerable experience in the automotive repair areas. The third man was an automotive engineer. We feel that by taking this approach we were able to define the unnecessary repairs in much finer detail.

Mr. ECKHARDT. The specific procedures you employed that allowed you to distinguish unnecessary repairs in various categories from necessary repairs, what is the difference there?

Dr. SCHROER. The procedure that we used to categorize the repairs again consisted of setting up a committee of four individuals, a senior parts man, a senior mechanic, an automotive engineer, and the a representative from NHTSA.

What we attempted to do for each of the critical five systems was to develop a matrix where we could identify, given a particular failed item in Auto Check, what corresponding items were required replacement, which of those items may be replaced by, let's say, a prudent repair shop, which of those items were in the gray area which some repair shop practices recommend replacement and some do not, and in the fourth category were those items which were definitely unnecessary repairs. An unnecessary repair were those items based on our inspection process which did not fail the inspection.

Mr. ECKHARDT. How does your project's capability to retrieve information compare with other projects with respect to the information which the FTC is requesting?

Dr. SCHROER. The Alabama project is the only project which from the beginning developed its own computer data base for storing information. During the project we used this data base primarily for managing the actual operation of the facility. The benefit of having the data in the computer, in addition to managing the project, is that these data are available for additional analysis. Based on my information, I think Alabama is the only project that has the information in the computer.

Mr. ECKHARDT. Thank you very much, sir. I think this has been most important testimony for our hearing.

Dr. SCHROER. You are welcome.
Mr. ECKHARDT. We will take a 3-minute break at this time.
[Brief recess.]
Mr. ECKHARDT. The subcommittee will resume hearings.
Mr. John N. Noettl.

STATEMENT OF JOHN N. NOETTL, DIRECTOR, MEMBERSHIP SERVICES, AUTOMOBILE CLUB OF MISSOURI

Mr. NOETTL. My name is John Noettle. I am director of Membership Services for the Automobile Club of Missouri and a member of the National Motor Vehicle Safety Advisory Council. I want to thank the committee for the opportunity to testify on titles II and III of the Motor Vehicle Information and Cost Savings Act.

I have testified before the House and Senate subcommittees on the Motor Vehicle Information and Cost Savings Act on many previous occasions and have described in detail the operation of the diagnostic clinics of the Automobile Club of Missouri, along with our experience on handling many operation and maintenance problems.

I will now only briefly describe the operation of the clinics but will be happy to answer any questions. I would like to present some facts that I feel are relevant to the cost, safety, environment, and energy problems related to the automobile. Specifically, I would like to state how inspections can play an important role in meeting many of the future goals in these areas.

To provide motorists of our area with an unbiased appraisal of the condition of their cars, the Automobile Club of Missouri opened its first automobile diagnostic inspection clinic in the fall of 1967 in St. Louis. It occupies 10,000 square feet and is equipped with the latest equipment for static and dynamic analysis. The clinic inspects all types of automobiles. In addition to the main lane, a customer may requet a special component check for such items as the engine, brake system, exhaust systems, and so forth. The clinic staff neither repairs nor recommends any repair facilities.

The success of the St. Louis clinic prompted the opening of a second clinic in Kansas City in the fall of 1974. Both clinics operate under identical procedures and provide identical inspection services.

The clinic inspection operation consists of four major parts. In the first, original inspection, the automobile is gone over in detail and the components on the automobile are graded according to criteria designed to measure whether or not the components are performing correctly, will go out in a short time, or are presently defective. These three measurements of the components are described on inspection forms and checked off as being either in column A for all right, B for borderline, or C for critical and in need of immediate attention.

This part of the inspection takes anywhere from an hour to an hour and a half.

The second part of the inspection systems consists of an analysis of the inspection report and the preparation of detailed repair instructions. The customer of the clinic is never instructed, for

example, to obtain a tune-up. He is specifically told what plug wires are bad, if any, to set the timing, replace the points, or, specifically, what needs to be done to put his car in top operating condition. If the customer so elects, he may be counseled on his needed repairs in addition to the written repair instructions. The counseling session is designed to further clarify in the customer's mind the exact condition of his automobile. He is also instructed as to what to insist upon when he takes his car to be repaired.

The third part of the system is completely independent of the clinic. The customer selects a repair facility and presents the original inspection form and a copy of the written repair instructions. If the repair facility has any questions about the inspection, he may call the clinic for clarification.

After the repairs are performed, the fourth part of the inspection system permits the customer to return to the clinic and for $1.00 have all the items rechecked for which he has repair receipts. The clinic determines whether the repairs were done at all and whether or not they were done properly. Should there be a discrepancy, the clinic will offer to resolve the matter between the customer and the repair facility.

Since opening the first inspection clinic in the fall of 1967, we have performed inspections in one form or another on more than 120,000 automobiles.

If we included our state inspection facilities, that would be closer to 150,000 automobiles.

Our Diagnostic Clinic inspection system, characterized by thoroughness and objectivity, provides a unique opportunity for the development of a comprehensive information system to make the collection of the recorded diagnostic data available in computer compatible form. A few years ago the club designed and implemented a computerized data collection system known as Automotive Inspection Data for Economic and Safety (AIDES). This system is capable of collecting data on a continuous basis from both of the clinics providing a bank of unbiased information on the condition of new and used cars of the area. Since over 500 items are inspected on each automobile going through Main Lane inspections and since the clinics are inspecting a total of nearly 70 automobiles a day, the system generates an enormous amount of data which can be used to analyze defects by make and model, to compare defects and performance characteristics of different makes and models, to analyze trends, to zero in on specific component failure problems, to assist in determining whether or not recalls should be made, and to assist in the quality control of the diagnostic clinic inspections.

The data generated by our diagnostic clinics, to my knowledge, is the only data available anywhere collected on a continuous basis, that represents an unbiased appraisal of the condition of new and used cars operating on the streets and highways. This is before the demonstration projects were started.

In addition to this, the clinic collects data on the quality of repair work through its recheck system. The uses of such data are limited only by the imagination of those people wishing to find out the actual facts of condition of automobiles in operation and the quality

of repair work turned out by the repair shops servicing cars that use the clinic inspection system.

In addition to the minimum standards required for the employees of the diagnostic clinic and the general training program operated continuously throughout their employment, we engage an independent organization to check on the quality of inspections made in our clinics. This quality control program consists of running test cars through the clinic and reporting on the quality and consistency of the inspections. After each quality control car is inspected, a meeting is held with the clinic staff to discuss any items that may have been missed in the inspection and any inconsistencies that may appear to be developing between one inspection and another. In addition, as I mentioned earlier, the data program assists in the quality control of the inspection by enabling trends of the inspection results on each of the individual parts and components to be analyzed.

Thus, a comprehensive system of inspecting automobiles, providing the motorist with an unbiased appraisal of the condition of his car, analyzing the quality of the repair work performed on his car, and collecting data has been in successful operation for many years.

In my opinion, automobile inspections provide the only practical means of determining the condition of the entire fleet and in assisting the individual motorist in getting his car repaired economically and correctly. New car standards will cover only a maximum of 8 to 10 percent of the fleet for any 1 year that they are implemented.

Using microprocessor, minicomputer, and communication system technology, an inspection system could be designed to act as a giant servo-mechanism. This mechanism, designed as sensitive as technology would allow, could feed back information on the condition of in-use automobiles to the manufacturers, and where appropriate, to the regulatory agencies for the purpose of correcting and improving the performance and efficiency of automobile components and systems. At the same time, information from this servo-mechanism could aid the motorist in his effort to economically maintain and operate his car.

The Safety Panel Report of the Task Force Report on Motor Vehicle Goals Beyond 1980 discusses ways to improve vehicle handling response, vehicle braking performance, vehicle lighting, visibility, fuel economy, and advanced mechanical concepts for improving safety. All of these concepts will have little effect if the hardware is not maintained properly.

In 1972, in remarks at a session of the First International Congress on Automotive Safety in San Francisco, I said "automotive maintenance and repair is a well publicized nightmare of frustration for the motorist"—at best. This applies to new and used automobiles alike. The average motorist drives his car until he feels something is wrong. In most cases, he has no idea what is wrong and has a very difficult time in communicating his thoughts to the dealer or repair facility. If he hears a noise in the engine, that is exactly what he says. He doesn't say that he hears ignition ping due to incorrect timing or advance setting. If he feels he has trouble with the front end, he doesn't explain the specific problem he may

be having with the pitman arm, relay rods, balljoints, tie rod ends or idler arms. The same applies to brakes, starting problems, transmission problems, and so forth. And what about the present on board diagnostic systems, the oil indicators, brake lights, engine temperature lights, and guages. The engine temperature light can indicate the need for repair of: a $5 sending unit, a $10 thermostat, an $8 fan belt, a $55 water pump, or the replacement of a head gasket for approximately $120. I mention this only as an example of the large variation in the cost of repairs for which the motorist must rely entirely on the advice from the repair facility personnel. Society, therefore, hass developed a transportation system that, in its present state, does not allow the motorist to have any practical means whereby we can make decisions regarding the economic and safe operation of the system.

An inspection system fits into the scheme of things today by providing a practical means to improve—for the entire fleet-safety, fuel economy, and emissions, while at the same time reducing the operation and maintenance costs for the individual motorist.

It is generally believed that mechanical failure directly contributes to only a small percentage of all automobile accidents. As far as I know, there is no hard evidence to the contrary. We are talking about a minimum of 6 or 7 percent to as high as 15 or 18 percent of all automobile accidents—and there can be all kinds of arguments about these percentages. However, inspections do more than correct mechanical deficiencies. Inspections can change or perhaps affect the attitude of the driver about the operation and maintenance of his automobile. A study of insurance claims of our policy holders showed that those who used our Diagnostic Clinics regularly had (1) lower accident frequency and (2) less severe accidents. The average cost per claim per clinic user was 35 percent less than for the nonuser. The total cost per policy paid out in claims was 46 percent less for the clinic user. Now this could be the result of a variety of factors. However, there is good reason to believe that drivers who are concerned about the operation and maintenance of their automobile are more careful drivers, and there is also good reason to believe that drivers can be made aware of the operation and maintenance of their automobile through diagnostic inspections.

The motorist today is frustrated about the operation and maintenance of his automobile since all he really understands is that to keep it running in good condition costs him an arm and a leg. He is distrustful of the manufacturer, he is distrustful of the dealer who sells him the car, of the people who repair his car, of the oil companies that provide him the fuel to run his car, and he is very distrustful of the government and regulatory agencies that keep adding more gadgetry about which he understands little. This distrust did not happen overnight. It was a result of inadequate system to assist the motorist in the operation and maintenance of his automobile and inadequate communication on the purposes of safety and emission regulations.

I believe that a motorist who has confidence in the system of operating and maintaining his automobile will be a safer driver than one who is not. The automobile plays such a major portion in every individual's life, that a lack of understanding of how to

operate and maintain it poses a real danger to the person operating it as well as to others. If people do not maintain their brakes they are; (1) probably not too concerned about the stopping characteristics of their automobile and (2) unable to deal with an emergency situation that requires quick stopping. The same would be true concerning the steering and handling components of the automobile as well as the tires, exhaust system, lights, wipers, et cetera.

Now we can't expect everyone to know a lot about the technical procedures for maintaining their automobile. People don't have the time or the interest to get into the specific details. They have to trust the system that is available to them for obtaining this maintenance, and the system has to offer an economical benefit to them for using it.

Inspections with a good repair program not only makes the driver aware of his automobile, puts the automobile in better operating condition and saves him money in the process, but it also has other byproducts. A well-tuned engine reduces emissions considerably. A report sent to the Regional EPA Administrators states that some of the more important conclusions are as follows: (1) deterioration from cars on the road is greater than we had previously expected; (2) inspection and maintenance programs will, in a cost effective manner, reduce pollutents from in-use vehicles; (3) the short test, which we have now developed, can readily identify high polluting vehicles; and, (4) most of these vehicles can be repaired at a reasonable cost. Incidentally, it would seem to me, that inspections are the only practical way to get an idea of the emission problem—if there is one—for the entire fleet. I understand that the preliminary results of the diagnostic demonstration projects carried out by the Department of Transportation also indicate that inspections do indeed pay off both from an economic and safety standpoint for the motorist.

While inspections provide the only practical means to evaluate deterioration of the automobile's safety and emission control components, they could also play an important part in determining whether or not safety and emission control components of cars involved in accidents were damaged and, if they were, whether or not they are repaired correctly. It seems inconsistent to me to constantly impose new standards for new cars and do very little followup on measuring their effectiveness, their deterioration rate, and the repairability should they be damaged.

I feel that inspections also provide the only practical means of improving fuel consumption of the entire fleet of automobiles. A well-tuned engine will use less fuel than one that is not well-tuned. Most of the reports I have seen put this efficiency increase at a minimum of 8 to 10 percent and at a maximum of 25 to 30 percent. There have been a few reports from suppliers of spark plugs and other automobile components that put the percentage much higher. An unbiased inspection system could readily determine the truth. I believe that a 15 to 20 percent improvement in fuel efficiency of well-tuned, well-maintained automobiles could be expected. In addition to saving fuel due to the engine operating within its design specifications, the detection and repair of fuel system leaks that are prevailant throughout the entire fuel systems would result in

additional fuel savings. What makes this so attractive is that a well-designed inspection repair system can readily identify these problems on the entire fleet of automobiles. It also can get these deficiencies corrected at a nominal cost, thereby making it attractive to people of all income brackets.

The fuel efficiency that would result from a well-designed inspection system would only be one result. Others would be increased safety, more economical operation, and maintenance of automobiles, and reduced air pollution.

I believe the technology is here. The introduction of microprocessors can make automobile inspections available to everyone at a nominal cost. I think we cannot progress into the 1980's in the areas of safety, pollution control, and efficient operation and maintenance of automobiles without a system that enlists the motorist's trust and provides information back to manufacturers and to the regulatory agencies for correcting malfunctions in the automobile's components and systems—whether that malfunction came from the original manufacturer or from lack of maintenance.

Our experience with a great many motorists of all income levels and with all kinds of automobiles convinces me that the motorist desperately wants a system that would assure them of economical and safe operation and dependable maintenance of their automobile.

The automobile is a product that has great effect on society after it is sold. We cannot compare it to a mixer, or transistor radio, or even a television set.

In one of the summaries of the Task Force Reports on Motor Vehicle Safety Goals Beyond 1980, a statement was made that the automobile is the fourth largest item on which Americans spend their income-after food, housing and other essential goods and services. For a very large segment of the population—people living in apartments, people that own more than one automobile, or an automobile and a recreational vehicle, or an automobile and a truck, people that are high insurance risks, people that live in a very low-cost housing, but need the automobile for transportation, all of these people—the automobile may very well comprise the largest expenditure next to food.

The automobile is a major expenditure for just about everybody. For most Americans, it is the only transportation choice they have if they are to get and keep their jobs. This gives society an obligation to develop a system that will minimize domination and frustration by this mode of transportation.

The regulatory agencies ought to look at the rulemaking process for achieving the 1980 and beyond safety goals, with the aim of administering sensible standards that would have a high potential of payoff and that causes the least amount of frustration for the motorist. Data systems for determining the effectiveness of standards can best be strengthened through inspection systems. Ineffective standards should be eliminated. The average motorist does not understand safety and emission control devices on his automobile. If these components deteriorate rapidly or become ineffective after his car has been involved in a minor accident, he can rightfully believe it constitutes one of the biggest ripoffs the government regulatory

agencies could perpetrate. However, if the standards are effective in saving lives and reducing injury and improving the environment, the motorist will support them as one of the greatest services the regulatory agencies can perform.

The automobile provides the greatest degree of freedom for individual transportation that has ever been known. If programs for the 1980's and beyond are designed in a sensible, straightforward manner to benefit the user of the automobile, which is just about everyone, so that the bad effects the automobile does have on society through accidents, environmental damage, and wasting energy resources, can be eliminated or made negligible, the automobile will probably be re-labled as this centuries greatest blessing to our society.

Mr. ECKHARDT. You have indicated, Mr. Noettl, that you have gathered considerable data of importance. And, of course, this is obviously important to your members, that is to drivers.

Mr. NOETTL. That is right.

Mr. ECKHARDT. Have you also supplied the information to DOT where it might be useful to them for instance, unnecessary repair data?

Mr. NOETTL. Yes, sir, we have supplied some data to the DOT upon their request. Most of the data has been in the form of special studies done under special task orders. If they are investigating a certain possible defect, they ask us for data, that is what we find concerning that defect. It has not been used on a continuous basis for analysis.

Mr. ECKHARDT. I have in mind that one of the main purposes of this act was in the area to which you seem to have given considerable attention, and I think the same thing is true of the Alabama Project; that is unnecessary repair.

Mr. NOETTL. Yes.

Mr. ECKHARDT. We had said that some of the purposes of the diagnostic projects were to study standardization of diagnostic systems and test equipment, the capability of the motor vehicle repair industry to correct diagnosed deficiencies or malfunctions, the cost of such repairs, the relative costs and benefits to the project, the efficiency of facility designs employed, et cetera. Obviously, in other words, we are concerned with just what you are collecting, that is a question of how the automobile repair system in America is serving people.

Mr. NOETTL. Right.

Mr. ECKHARDT. And has DOT asked you for anything along these lines or do they just ask you questions respecting specific defects that you run into in connection with your inspection?

Mr. NOETTL. Yes. Going on memory right now, I don't remember being asked about the quality of repair work. We did do some studies on our own. One of the figures we have publicized is that 40 percent of the repair work, according to the way we count, is done unnecessarily.

Now, our inspection is extremely thorough, relative to many of the private diagnostic clinics. If we count individual items that we inspect on a car, it totals over 500.

We have what we feel is the latest equipment to perform these inspections, and we use the dynamic machinery that may not be

used in a lot of other inspection processes. So, we are pretty critical, and our figure, like I say, is 40 percent of unnecessary repair work.

Mr. ECKHARDT. I thank you very much for your testimony, it has been most useful and the project is of great interest to this subcommittee.

Mr. NOETTL. Thank you.

Mr. ECKHARDT. Mr. Randall?

STATEMENT OF DONALD A. RANDALL, WASHINGTON COUNSEL, AUTOMOTIVE SERVICE COUNCILS, INC.

Mr. RANDALL. Mr. Chairman, I am very pleased to be here, and most appreciate of the endurance of the Chairman's ability to sit for so long on a hearing so late in the afternoon.

Mr. ECKHARDT. I said to Dr. Schlesinger yesterday in a hearing in which he and I, I think, were the only remaining persons, that if this were to be an endurance contest, I would rather it be out drinking beer. He said, "Well, you have control of that."

Mr. RANDALL. It certainly is a demonstration, I think, that the consumers can take heart that the Congress and this new administration are going to give some real attention, I think, to one of the most important consumer pieces of legislation that has been enacted in the last several years and that is this Public Law 92-513.

I worked over on the Senate side—and I will try to summarize my testimony so we don't belabor the committee and the audience either. I worked over in the Senate during the time that this law was being drafted as a result of the hearings that were conducted over there for four years. I would like to focus initially on one point which I think we seem to have overlooked here.

When the insurance people were testifying they were concerned about title II as it was or might affect their rating apparatus or the premiums.

Title II, as I recall, when we were working on that, had a far wider objecjtive. It was to rate cars not only on their insurance costs—that was just one incidental point—it was to rate cars on their repairability, their cost to own and operate and insure.

In Sweden they have been doing that for 10 years now, and they publish an annual report on each make and model car and I furnished a copy to Mrs. Foldes earlier of the Swedish study, the one initially done in 1969. It is available to the people of Sweden to select cars based on real world performance data, not simply the insurance costs, not how it performs when it is involved in a collision, but how that car performs on a day-to-day basis in terms of cost to own and operate.

An interesting thing in Sweden, when they began publishing this, the auto manufacturers reduced the price of their parts in many cases by 25 percent in order to make their cars appear to have a better rating in the system. It was that objective that as a staff person I had in mind when I suggested that to Senator Philip Hart at the time.

I think as a representative of the auto repair industry one tends to fall into the category of being suspect once you put on a hat, and go over on that side, but I do want to say we acknowledge and

recognize that fraud does exist in the auto repair industry, as indeed, it exists in almost every profession known to man, including the legal profession.

It constitutes a terribly small part of the overall problem that American motorists have with their cars. The California Bureau of Auto Repairs in California, studied the issue and found that it constituted less than 1/10 of 1 percent. But it really is a moot question. The motorist who feels that he has been taken may not understand the difference between the ineptness of the mechanic who in good faith sold him the shock absorbers, but who did not intend to defraud the purchaser at all. In fact, we sell quite a large number of shock absorbers in this country based on being able to push up and down on the car and decide does it spring too lightly or does it bounce too often.

A young inexperienced mechanic pushing up and down on some of the more luxurious cars might decide the shock absorbers need to be replaced, when, in fact, they are supposed to ride in a spongy fashion.

The Senate hearings had really several major findings. The first one was roughly one-third of the repairs performed were unsatisfactory, improper, or unnecessary, and those are quite different things.

The amount of that loss to the public was estimated by Senator Hart at the time to be somewhere between $8 billion and $10 billion a year. That is when the after market parts business and service in this country was about $30 billion to $33 billion a year.

Today, that market is $45 billion. If we take the data that was assembled from one of the diagnostic programs that DOT undertook pursuant to Public Law 92-513 and we extrapolated the 24 percent of unnecessary work and we tie that to the existing market today, then we could reasonably argue that would be $10.8 billion annually, in unnecessary repairs.

However, in fairness to the industry, I think it's important to point out that the Alabama Project had some mitigating factors.

The small shops there knew their work might be reinspected, so they applied a higher level of maintenance and service to those vehicles than they might otherwise have done. Very much like doctors tend to test and maybe even overtest when they suspect that the patient they are treating is a lawyer and he might be litiguous in terms of malpractice.

Three major findings in addition to the auto repair and maintenance aspects of the Senate hearings were, No. 1, that vehicles do indeed sustain a very substantial amount of damage at very low speeds. Two, that used cars frequently had their odometers tipped. It is known as tipping the clock in the industry, turned back to artificially enhanced the value. And, three, that we were losing a very large number of cars in the stolen market, which were stolen and either stripped for their parts, or they were stolen and reregistered in States that had lax registration requirements.

We estimate that approximately 1 million cars are stolen annually in the United States, and the insurance industry told me this week that the cost for the nonrestored vehicles amounts to $450 million annually.

We do not have hard figures on the total amount of money that the public loses through the odometers being tampered with. However, the Department of Justice and the Department of Transportation, in discussions between themselves, have indicated that they believe the value to be $100 per 10,000 miles by which the odometer is reduced. We change hands annually on 23 million to 25 million used cars in this country. We don't know how many of all of those have the clocks tipped, but we believe from a Department of Transportation study that 60 percent of the fleet cars, that is, that are in major fleets and then sold as used cars, have the odometers tampered with. If you apply the figure across the board, we think that a reasonable estimate of loss to the public on odometers through tampering would be in excess of $1 billion.

An interesting thing about the Department of Justice, and when I talked to them about this hearing I had an informal statement from one of the people there that he hoped that the Department of Transportation would undertake the responsibility for enforcement of the odometer provision, because the department, under this law, had far greater authority than did the Department of Justice. In fact that the Department of Transportation had authority to hire investigators to go out and see that this title IV of the bill was enforced. When one talks to the Department of Transportation, one gets the impression that they thought that the Department of Justice was handling it, and Justice tells me that they have something like 15 grand jury investigations underway, which is a rather pale significance when one considers that 25 million units change hands annually. The Department of Transportation to my knowledge does not have one investigator in this whole area, and it yet represents a billion dollar cost to the public, if not substantially more than that.

The Senate hearings very clearly were oriented toward the economic aspects of auto repairs, and the impact on the millions of car owners. Safety and emissions were only two incidental parts of the concern of that body during the investigation and the drafting of the original bill.

The title of this bill itself should have been a clue to the Department of Transportation that the Congress was in fact concerned about information to the public. The intent was to evaluate the feasibility of rating each make and model car according to the repair characteristics, the crashworthiness, the cost to own, operate and insure. It also should have been obvious to the Department of Transportation and the two adminsitrations which have in my opinion misadministered the program over the past 5 years. The cost saving aspect of the law was paramount, not safety and not emissions, and I don't want to minimize the very beneficial effect that the diagnostic centers could have had on safety and emissions, had they been implemented with the spirit with which the Congress enacted this law.

The Congress in enacting Public Law 92-513 clearly indicated that it was cost savings and information that was to be the benefit conveyed on the public.

Finally, I really would like to call attention to recent developments and urge that the Congress consider the various State and

Federal statutes that have been enacted and the regulations which affect not only production of new cars but the maintenance and service of those in use.

This is Mr. Alexander, who has recently joined the National Institute of Automotive Service Excellence which rates and certifies technicians now for competency.

This is a list of six of the major Federal statutes that began in 1966. I call them euphemistically the FEMS, the Federal Motor Vehicle Safety Standard in 1966; the Federal Motor Vehicle In Use Safety Standards; the Federal Motor Vehicle Emission Control Standards in 1970, the FMVECS; the Federal Motor Vehicle Crashworthiness Standards in 1972, that is the FMVCWS; the Federal Motor Vehicle Noise Abatement Standards enacted in 1970 and to become effective in 1976 through some time in the near future, FMVNAS; and the Federal Motor Vehicle Fuel Conservation Standards, that was in 1976, the FMVFCS.

The FEMS have dramatically, together with creature comfort gadgets that are demanded by consumers, made our vehicles extraordinarily complex. The complexity of the vehicles themselves gives us and the motorists of this country their major problem.

I believe that all of the objectives that the Congress had in enacting those Federal standards can be met and enhanced, enforcement monitoring and indeed the fulfillment of the statutes can be largely facilitated by the motor vehicle diagnostic program that was envisioned in title III. The importance of that program, Mr. Chairman, is that we have 134 million units today traveling our streets and highways, 1 trillion 700 billion miles last year, and the direct cost of that system was estimated by Hertz Corporation to be more than $200 billion last year. I believe the figure was $238 billion and most of those vehicles do not have any on board diagnostic capabiity. Indeed, they are not even designed to easily facilitate analysis, or to be diagnosed, and we don't foresee that the vehicle population, until late in the 1980's, will begin to have on board diagnostic capability, that those vehicles will substantially penetrate the vehicle population of this nation. Simply put, it will be 1990 before we see vehicles that have the ability to tell the owner or the service technician what is wrong with the vehicle and needs to be repaired, and then to indicate to him. Has it been repaired correctly.

I would like to show you an example of a first generation type on board diagnostic capability. This is a very low cost connector. It is called the General Motors' Central Test Point Diagnostic Connector, and they have started installing this on some of their large sized cars, very easily accessible to the technician. It is a simple plug which is hooked to vital points of the electrical system of the automobile.

If one has that installation on the car, then one can take one of the relatively simple, very low cost diagnostic tools.

The one I am holding in my right hand is called the ACA, the Air Conditioning Analyzer. This is almost foolproof or idiot-proof, as it is known in the industry. You plug it into this plug and follow a very simple process, and you can analyze the entire electrical

system of the air conditioning, and that is a very laborious and time-consuming process without this connector.

A second one, which I have here, is another idiot-proof device. If is followed in sequence, each light comes on and it can check out the entire electrical system of the automobile, including the wiring under the dash, and the fuse box, which is a very useful thing. It is a very efficient way of locating electrical problems which are increasingly becoming a major factor in repairs as we move into the era of electronics on automobiles. In fact, the Seville Cadillac now in its cost of production has one third of the cost involved in electronics. This is a dramatic change in the auto industry.

Last is a device that has a probe which when inserted above the flywheel can read absolute dead center timing, and it can show the exact RPMs or revolutions per minute which enable the technician to very easily reach over and tune the automobile so that it is tuned precisely right. Tuning is a very important part of not only the satisfactory operation of the vehicle, but it means that if it is tuned correctly, it will start when you try first thing in the morning. It will idle smoothly when you get it in operation and it will stop operating when you turn the key off and take the key out, unlike very many cars which you have now which will not start, which idle roughly, and won't stop when you take the key out.

Now that is a consumer item.

Mr. ECKHARDT. Mr. Randall, about how much does that equipment cost?

Mr. RANDALL. These three, as I say, are somewhat first generation. The cost is slightly under $500, but the cost since I have gotten these just 4 months ago has dropped to somewhere in the neighborhood of $300 because of competition from the Japanese I understand. That cost is coming down rather dramatically. It does demonstrate that we can build in the diagnosis to our vehicles that is necessary, and I commend General Motors for doing it, and I understand Ford is moving in that direction and some of the others.

I am reminded of a fellow who once brought to me a device which would indicate the condition of brakes on cars, and if one ignores the brake after it wore down to a certain point, a light would come on, and now we see those in cars today. If you waited a little bit longer and ignored the light, it wore down a little bit further, it would set off a buzzer that would buzz constantly. He said he was trying to work out a way so that it would play through the transistor radio if you ignored the first and the second one, constantly play through the radio "Nearer my God to thee."

I say that facetiously, but the point is that we do not have a significant technologically accurate low cost means to analyze shock absorbers on our car, and we buy over $600 million worth a year. We don't have a means to quickly easily diagnose the condition of brakes without having to pull a wheel on a car, but we could have, and there are other areas in suspension, steering and other factors which we could move into.

In conclusion, I would like to say that in my prepared statement, if I may request that that be included in the record in full, that there is a great need to salvage at least two of the remaining diagnostic projects that are under the existing law. They can

provide a number of things, and I have outlined six major points, but more importantly, I think is that there is an enormous need, an urgency, for the Congress to renew its mandate to the Department of Transportation and to the Environmental Protection Agency, and tell those two agencies who have developed an enormous chasm between them, in terms of vehicle inspection apparently, that the Congress wishes for them to consider their joint responsibility and to collaborate in any vehicle inspector program.

It is important that we not have an EPA inspection program and a DOT inspection program. It is important that we look at all six of the Federal standards and areas, and tell the public and admit to the public that our safety inspection programs in the past have been Mickey Mouse. They have been a charade. They have been a waste of their time and their money, but that does not mean that effective, carefully developed and very carefully sold to the public vehicle inspection will not return to the public a great deal.

In fact, on the last page of my statement, I pointed out from data that I obtained from the Department of Transportation that a nationwide system of 9,000 diagnostic lanes could be established for a cost of about $1.4 billion, and operated at an annual cost of about $935 million, and that that operation would create 100,000 direct jobs, permanent jobs. It would create 50,000 immediate jobs for construction of the facilities, and for employing people who produce the equipment that would go into those facilities. So that if given the mandate to do so, we could create 150,000 jobs, and it would not necessarily involve the expenditure of Federal funds if the government would mandate that the States undertake such inspection facilities and not threaten to take their money away from them for their highway funds but show them how it can be done through private industry, franchised very much like the people in Holland do, in the Netherlands, franchised to private industry, who through their diligence and their efficiency can produce the inspection facilities. Private industry would invest the money, given the assurance that they had an ample time to amortize the investment, such as a VA guarantee loan arrangement that the government itself could undertake to guarantee, but not have to appropriate any money. Then we could give the public at least $2 billion, probably substantially more than $2 billion, a year in value returned from this system.

We could find a lot of stolen cars and get them returned. We cou find a lot of the cars that have never been taken in for the warranty work from the manufacturer because they were recalled, and we could get those back in and get them brought back into compliance at the manufacturer's cost, a value which the public has already paid for at the time they purchase their cars. Many other values are available that the public could enjoy from a nationwide diagnostic system.

It shouldn't be thrust upon the public or the States quickly. It has to be a joint partnership between the Federal Government and the States, with the public being sold on the idea because it is of benefit to them in emission reductions, fuel conservation, longer life of their vehicles, and all of the others that I mentioend earlier.

I am deeply grateful for the opportunity to be here, and I hope that I can answer any questions that you may have.

[Mr. Randall's prepared statement follows:]

Automotive Service Councils, Inc. 188 Industrial Drive, Suite 112 Elmhurst, Illinois 60126 (312) 530-2330

DIRECT REPLY TO: Washington Office
DONALD A. RANDALL, Washington Counsel,Suite 1201, 1000 Connecticut Ave., N.W.
Washington, D.C. 20036 Tel. (202) 833-8698

DONALD A. RANDALL
TESTIFYING ON BEHALF OF
AUTOMOTIVE SERVICE COUNCILS, INC.,
BEFORE THE SUBCOMMITTEE ON CONSUMER PROTECTION & FINANCE,
INTERSTATE AND FOREIGN COMMERCE COMMITTEE,
UNITED STATES HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

ASC

I appreciate the opportunity of appearing before this committee, and I hope that my testimony will provide some background and an overview of part of the legislative history and other developments that concern this very important piece of legislation.

From 1967 through 1973, I was staff counsel for the U. S. Senate Judiciary Committee, Subcommittee on Antitrust and Monopoly, chaired by the late Senator Philip A. Hart, one of the nations most eminent consumer spokesmen. In 1972, working closely with the Senate Commerce Committee staff, we jointly drafted PL 92-513.

Beginning in 1968, the Subcommittee began what turned out to be a four-year investigation of the auto repair industry. The investigation heard from dozens of witnesses and received over 4,000 pages of formal testimony. We collected over 60,000 exhibits and interviewed several hundred individuals who were not witnesses in the formal hearing. Testimony and evidence was received from every segment

of the auto industry, from manufacturers to independent service establishments. The exhibits include thousands of letters from irate motorists. The printed record of those hearings are contained in six volumes of the Auto Repair Industry investigation by the United States Senate.

A careful reading of those hearings discloses a finding that some fraud in the auto repair industry does exist as it does in every profession. However, if one studies the record of the committee and reviews information available in various consumer protection agencies across the country, including the California Bureau of Auto Repair, it can be reasonably established that fraud constitutes a very small part of consumer complaints or problems motorists experience with their automobiles and repairs to them. According to the California Bureau of Auto Repairs, fraud constitutes less than 1/10 of 1% of the cases that they have investigated. However, where the semantic difference between outright fraud and 'overcharge' and service lies, is a moot point to many consumers who suspect that 'they've been had.'

Clearly, the Senate investigative hearings and others that have been conducted since then by the Federal Trade Commission and the Diagnostic Demonostration Projects of the Department of Transportation in the various states show that the main problem with auto repairs is complexity in vehicle design. The complexity built in to satisfy a public sold on power, gadgets, external beauty and obsolescence affects access maintainence and service; requires a high level of knowledge and expertise and specialized tooling to correct deficiencies; and makes the naive and captive vehicle owners vulnerable to any prescribed repair. The problem is not easily corrected. The

buying public's mood will not be easily altered even with changing energy priorities and rise in automotive costs. Also, it would be too demanding to expect the average motorist to be knowledgeable about repair needs and verbalize these facts with the repair shop personnel. Therefore, within today's technology, the burden of responsibility for proper and equitable repairs falls on the mechanics and automotive technicians -- it is my opinion that these technicians are unable to meet this challenge.

Now, if I may, I would like to turn to the Senate Investigation of the Automotive Repair Industry.

The Senate hearings disclosed five major areas where multi-billion dollar economic losses occur in the public's use of the private transportation system.

Foremost was the estimated loss of approximately 10 billion dollars annually due to repairs that were either unnecessary, improper or unsatisfactory to the vehicle owners. This was about one-third of the total retail sales of parts and service in 1972 when that investigation ended. It now appears that the Department of Transportation preliminary report from the diagnostic centers tends to confirm that earlier estimate.

Subjective NHTSA evaluation by a group of master mechanics reviewing the repair activities at one site (Alabama), considered approximately 24 percent of the repairs unnecessary. Extrapolation of this percentage to the national scene would imply an unnecessary repair expense of 10.8 billion dollars to the American motorists. In fairness to the repair industry, the repairs that may have been construed as unnecessary at the site (Alabama), may have been done to insure compliance with the re-inspection procedures conducted at the diagnostic center. To insure compliance, the industry tends to take

a conservative posture; much as a medical doctor with the fear of malpractice, tests, possibly overtests patients during the medical diagnostic mode. The auto repair industry, much like the medical profession, tends to keep treating the symptoms until the trouble goes away. Unfortunately, the auto repair industry has not kept pace with the medical people in developments for accurate diagnosis capability. There certainly are repairs that are performed incorrectly, but however incorrect the repairs may have been, they were probably needed. There is an abudnance of evidence showing there are many very necessary safety related repairs which go unperformed because the motorists either refuse to have the work done or because they lack the confidence in the recommendation of their service technician. On average, for brakes alone, the DOT study shows that 36% of the cars failed the initial inspection! That means they did not comply with the minimum Federal Motor Vehicle In Use Safety Standards. Yet, these vehicles are permitted to operate across state borders and into Washington, D.C., and indeed on every street and highway in this nation. They constitute a real hazard to the motorists and pedestrians who have to use our streets and highways. Given proper diagnosis, these repairs would be made and the motorists could have real confidence in repairs recommended by these diagnostic centers.

Three other major findings of the Senate hearings concerned the enormous damage suffered by vehicles in very low speed crashes, used cars which had the mileage reduced to enhance their value, and the economic losses resulting from stolen vehicles. We have approximately 1 million cars that are stolen annually and either stripped for their parts, or they are retitled in states which do not have a formal title and registration requirement. The insurance

industry estimates that the value of the stolen vehicles which are not recovered and subsequently restored to their owners amounts to more than $450 million annually. The Senate investigation also disclosed a multi-million dollar economic loss to the public through the sale of used cars which had odometers rolled back. In this tampering, the mileage indicator on the vehicles is reduced, artificially inflating the value of the vehicle. Annually, there are some 23 million to 25 million used cars which change owners. The Department of Transportation has some studies which show that the economic loss to the public is $100 in inflated value for each 10,000 miles by which the odometer is reduced. While no firm total economic loss is available, the Department of Justice has indicated that about 60% of used fleet vehicles have their odometers rolled back. I estimate the total economic loss to the public on all used cars is over 1 billion dollars annually.

Finally, losses due to unsatisfactory, incorrect and unnecessary repairs to fragil--easily damaged cars would point to an economic loss to the public of over $1 billion annually.

All of the foregoing factors formed the basis for the primary intent of Congress in PL 92-513 -- addressing the economic impact of vehicle ownership. The Senate hearings were oriented toward the economic aspects of auto repairs and the impact on the millions of car owners. Safety and emissions were only two incidental parts of the concern of the Congress and were very peripheral to the ultimate adoption of PL 92-513.

There was in 1972, as there is 1977, a broad consumer unrest and concern about the cost of their auto repairs and the general costs of owning and operating their private motor vehicles. I believe it was this fundamental cost of ownership that was the objective

Congress had in mind when it provided for information to the public through the Motor Vehicle Information and Cost Savings Act. The Title itself should have been a clue to the Department of Transportation that the Congress was in fact concerned about information to the public. The intent was to evaluate the feasibility of rating each make and model car according to the repair characteristics, the crash worthiness and the cost to own, operate and insure. It also should have been obvious to the Department of Transportation and the two Administrations which have, in my opinion, misadministered the program over these past five years, that the cost savings aspect of the law was paramount, not safety and not emissions! I do not wish to minimize the fact that these diagnostic centers could have had a profound beneficial effect upon safety and emission reductions, noise abatement and fuel conservation. However, the Congress in enacting PL 92-513 clearly indicated that it was cost savings and information that the act was to convey as a benefit to the American motorist. Safety and emissions were already covered under other laws.

Finally, recent developments urgently require that Congress' attention now be focused on government regulations and standards affecting the production and servicing of new motor vehicles. These began in 1966. I would like to briefly describe them. These laws and administration of them interact and interrelate to the basic planning guide and pilot study program objectives which PL 92-513, and especially Title 3 as amended, was designed to facilitate. They are listed below:

1. Federal Motor Vehicle Safety Standards - FMVSS (1966) new cars
2. Federal Motor Vehicle In Use Standards - FMVUSS (1967) used cars
3. Federal Motor Vehicle Emission Control Standards - FMVECS (1970)

4. Federal Motor Vehicle Crash Worthiness Standards - PL 92-513 FMVCWS (1972) -- The Motor Vehicle Information and Cost Savings Act

   Title I - Bumper Standards
   Title II - Rating Each Make and Model
   Title III - Diagnostic Centers
   Title IV - Odometer Tampering

5. Federal Vehicle Noise Abatement Standards - FMVNAS (1970)

6. Federal Motor Vehicle Fuel Conservation Standards - FMVFCS (1976)

All of these came about as Congress moved to enact legislation aimed at forcing the automobile manufacturers, domestic and foreign, and the entire automotive parts and service industry to produce and service vehicles which are less abusive or offensive to our environment and our people. These laws have required that vehicles consume less energy and as a result less of our other natural resources such as rubber, copper, lead, steel, etc. This body of public law may be said to be directed toward requiring the production and use of ethical vehicles -- those that are safe, environmentally compatible and socially acceptable within the bounds of our nation's economic requirements.

To summarize, then, the Motor Vehicle Information and Cost Savings Act, as it has been amended, and in particular the 1976 amendments, were designed to provide a self-policing and enforcement mechanism which would address many areas of public concern, both of the Federal and State Governments. In a word, this law is the "keystone" to the six areas of federal standards. It was certainly aimed at the widespread consumer discontent and concern about the automobile, their costs and their repairability.

Fundamental questions were propounded by the Congress in directing DOT to undertake these projects. First of which was to study the technical capability of the existing state of the art in diagnos-

tic equipment. Next was the capability and willingness of private industry to meet the future requirements for low cost diagnostic equipment. This equipment would need to address the problems of these vehicles during the interim years, 1977 through 2000. It is during this period that vehicle designs and the entire vehicle population will not readily accomodate diagnosing. Simply put, complex vehicles that exist today, and most of those that will be produced through about year 1984 will not have on-board diagnostic capability. They will simply be operating in the real world with the motorists depending upon the skill level of the technicians to analyse and perform the needed repairs. The Motor Vehicle Information and Cost Savings Act was designed to address the interim problems so that we could develop the kinds of low cost equipment needed to facilitate this diagnostic capability on the vehicles during the era of 1977 through 2000. Toward the end of this century, we will see a substantial number of vehicles with on board diagnostic capability. Those vehicles will themselves have indicators which will tell the operator or the service technician what needs to be fixed and if it has been fixed correctly. But, keep in mind these will not constitute a major part of our vehicle population until after 1990!

In my opinion, the diagnostic equipment available today is not adequate to properly, conveniently, quickly, and at low cost be connected to these non-diagnosable vehicles. Therefore, if answers to unneeded and unsatisfactory repairs are found, we must accomodate this lack of on-board technology with improved off-the-vehicle diagnostic equipment. I have with me today an example. This is the General Motors' Central Test Point Diagnostic Connector. It is a very low-cost item that GM has been installing on some of their large-size vehicles. This connector would enable the average mechanic through

2. Projects would be able to provide vehicle owners with critical information -- keep and repair or trade or junk their vehicles.
3. Two years of data, log books and basic information has already been collected. This can be built upon to give us sound quantative data to assess the real benefits to the public in energy conservation, air pollution, noise abatement, safety and operating costs reduction which may come from unbiased diagnostic inspections.
4. None of the projects turned their attention to the newer catalytic converters and other newer emission control equipped cars. We have a 50,000 mile or five (5) years mandatory warranty for which the public must pay in advance. Yet, we have no technically reliable or convenient means for the public to have their vehicles checked to see if they are functioning as designed. We know from EPA studies and the November 1976 report to the Regional Administration of EPA that our controlled vehicles are deteriorating more rapidly than previously expected.

The Congress had determined to assess a huge cost for those emission systems on the public and yet the average motorists, indeed most car owners have no means of determining if these cars are operating in compliance with the Federal Motor Vehicle Emission Control Standards -- or even if they are safe. I am afraid that most motorists -- absent mandatory inspection and maintenance -- will not particularly care if their cars are in compliance or not. The evidence clearly shows that many motorists dismantle and disable their emission devices. One third neglect the

Where the states or counties operate the inspection facilities, they can benefit.

In conclusion, the Motor Vehicle Information and Cost Savings Act should be reconstituted because it was torpetoed during the last five years. It was swept aside because it was a consumer bill. The mandate to the Department of Transportation should be clearly renewed.-- with urgency if we are to meet the needs of our motorists during the interim period 1980-2000. The scope and objectives should be enlarged. The budget should be significantly increased with the objective of ultimately establishing a nationwide system of unbiased independent diagnostic centers which could offer to the American motorists billions of dollars in annual benefits in return for the comparatively small investment that private industry -- not the government -- could make. I am suggesting that legislation be drafted which would authorize the states that install diagnostic inspection facilities to franchise the task of operating these facilities to private industry. In return, they could be guaranteed that a reasonable period for amortization of ten years would be underwritten by a government insurance program -- similar in concept to VA home insurance. In this way, if the states mandate inspections, private industry would put up the capitol to establish the inspection facilities and the Federal Government would guarantee that they could be operated during a period sufficient to amortize them for a reasonable time. Thus, we can achieve the objectives which I have outlined in my statment without the expenditure of huge sums of federal tax money and with the efficiencies and benefits that normally accrue through private industry's dilligence and enterprise. The benefactors would be the public, both economically and in emission reductions, and in fuel conservation, and in noise abatement, and finally in safety.

A nationwide system of diagnostic motor vehicle inspection which would include all six of the Federal Motor Vehicle Standards and provide the motorist with an accurate unbiased list of needed and optional repairs can be initially established at a cost of approximately $1.4 billion dollars. This would provide for about 9,000 very sophisticated high volume diagnostic lanes. These facilities would create 100,000 permanent new jobs and at an annual operating cost estimated to be $972 million. Construction and manufacture of the inspection equipment would create an additional 50,000 indirect jobs.

The annual benefits to the public would be in excess of $2 billion through fuel conservation, extended life cycles for their vehicles, less breakdown and resultant consumer loss of transportation and working hours, reductions on pollution, significant reduction in unnecessary, unsatisfactory and improper repairs and identification and return of stolen vehicles. These facilities can also provide value to the public by identifying vehicles which should be recalled and repaired at the manufacturers costs due to safety and emission control defects.

Mr. ECKHARDT. Mr. Randall, in addition to the jobs that would be created for those engaged in inspection centers, I assume it would also create jobs with respect to needed repairs.

Mr. RANDALL. Mr. Chairman, it would. In fact, you have had two witnesses here so testifying.

In my prepared statement I indicate that there is a lack of confidence, the American public questions the technician's recommendations when he tells them that they need brakes replaced. Indeed, one of the officials in the Department of Transportation who was told that he should have his brakes fixed refused to do so until he finally ground the brakes down to the drums, and he had to replace the drums on all of his wheels.

If we have that kind of apathy toward a serious matter such as brakes, and one-third of the cars operating on our streets and highways have very seriously defective brakes, then what I am saying is that the diagnostic centers would give the public confidence to undertake the repairs that are recommended. It would not mean that we would get more repairs necessarily, but we would shift from the unnecessary and needless repairs to those that are genuinely needed, and we would not be wasting a rather substantial amount.

Mr. ECKHARDT. But even if we spent a net of more money for repairs, and those repairs were the kind of repairs that, for instance, save gasoline——

Mr. RANDALL. Yes.

Mr. ECKHARDT. We would still come out very much on the high side of the balance, would we not?

Mr. RANDALL. The evidence clearly shows that tune-ups and adjustments after inspection just for emissions returns to the average owner more than he spends on the tune-up in 1 year.

Mr. ECKHARDT. In all then, society would be paying more for jobs and less for oil?

Mr. RANDALL. That is correct.

Mr. ECKHARDT. This would not seem inappropriate as a program which is an adjunct, so to speak, to the total energy program of the country, as I see it.

Mr. RANDALL. There would be a direct benefit to it, although I think that the benefit in terms of fuel reduction is somewhere on the order of 2 percent. Some very recent studies that I have had access to show that it is about 2 percent improvement, but the other part of that is that these jobs would be, unlike the public works bill that just cleared the Congress, I believe it was yesterday, $4 bilion to create 200,000 jobs.

You can create 150,000 jobs here at a very substantial savings in terms of Federal investment.

Mr. ECKHARDT. There is another line of questioning I would like to go into.

I know that you were most active, as much as any other person, in formulating the basic policy of this act, indeed in drafting much of it. I am concerned about its major purpose. I have the feeling that there has been some misapprehension on the part of the Department of Transportation as to its purpose.

I notice in title III, and I am reading and omitting irrelevant material:

"Each project shall provide the secretary information and data relating to"—and then skipping—"the capability of the motor vehicle repair industry to correct diagnosed deficiencies or malfunctions and the cost of such repairs."

I noted in your testimony that you said that in the hearings the Senate found some 30 percent of repairs to be unnecessary. It is an interesting fact that the Alabama inspection operation has come to about the same conclusion, 30 percent of the amount paid for repair I believe they found was for unnecessary repairs.

It would seem to me, in reading the language, that the project shall provide the secretary—information and data relating to the capability of the motor vehicle repair industry to correct diagnosed deficiencies or malfunctions and the costs of such repairs—would include information concerning these unnecessary repairs, the very type of thing that has been found in the Alabama project and possibly also in the other projects that we heard reported on today.

Would you feel that that would be within the purpose of the act?

Mr. RANDALL. Absolutely. I think that that was one of the foremost interests that we anticipated as staff people at the time, getting answers to from the Department of Transportation in June

1977. The timing on this, Mr. Chairman, was very important, because we recognize from the studies that we were going to have this interim period of vehicles that were not diagnosable from 1970 through 1984 to 1990, and we knew that we were going to have to address the issue of repairability as one of the major consumer problems.

We also knew that fuel was going to become critically short, because the antitrust committee had spent 2½ years previous to the beginning of this investigation studying the petroleum industry. We forecast the shortage and in the initial draft of the bill. It even had a provision in title II to rate each make and model car according to its fuel consumption, and that was stricken in committee, you may recall.

Mr. ECKHARDT. Since each of these projects is of course a kind of test tube to get really meaningful data, there should be someplace where this data is received and analyzed and further used, and I would assume that under the act that would be the Department of Transportation.

Mr. RANDALL. I have very serious reservations about the scope of the tasks that were designated to be done. I think that the department very clearly ignored the consumer aspect. They very clearly ignored the economic thrust. That was the paramount thing that this bill was designed to accomplish.

We already had a safety law. We already have an emission control law. When this bill was enacted it was reaching into the economic considerations in the tens of thousands of complaints that the Federal Trade Commission and members of the Congress were getting about auto repairs, and warranties in particular, and it was addressed to that aspect.

I cannot prejudge what the National Highway Traffic Safety Administration will testify to. I only know as a private citizen and a person of interest and a representative of a group of repair shops who are concerned about both their industry and their customers that the data and information that I have received thus far indicates to me that the last 5 years and the more than $18 million that was spent on this project did not accomplish those things that were the primary interest of the Congress when we drew it up. I did try in my formal statement to enumerate what questions we were trying to promulgate.

Mr. ECKHARDT. I note here that the Chairman of the Federal Trade Commission seems to be of the same view that you are, and I must say that I agree with you.

I was an author on the House side, and I felt that the major thrust of title III was to look into the question of the cost of repair, and whether or not repair was being done efficiently for the public.

The Chairman writes to the Secretary of DOT asking the following. He says:

"Analysis of this data and further collection of data could reveal, for example,"—he is asking for the diagnostic records—"the extent of consumer economic loss resulting from unnecessary repairs of particular components of different types of repair outlets, the extent to which the performance of unnecessary repairs varies from shop to shop, whether the incidence of unnecessary repair and the

quality and costs of repairs differ significantly between shops that employ mechanics certified by voluntary certification programs and those that do not, the effect of flat rate and other mechanic compensation systems on the quality of repair work, and the incidence of unnecessary repairs, and whether, and the extent to which, the incidence of unnecessary repairs may be reduced when consumers have access to diagnostic centers which specify in detail what repair work needs to be done."

Now that would seem to me to be a request entirely within the intent of the provision respecting diagnostic clinics, as I see it.

Mr. RANDALL. I could not agree more.

Mr. ECKHARDT. However, I note that the Secretary of Transportation replied, and incidentally I do not mean to criticize the present Secretary because, being new, he may be without the information. I suspect that he may be on something of a spot when he is asked for information that he does not have. In any event, he says:

"A final report is being prepared at this time, and will be available in June. While this report will contain much of the information you requested, I must point out that it will not meet all your needs. The projects were designed to gather specific information stated in the enabling legislation, and therefore do not include certain areas of your interest."

Well, I would have thought that the enabling legislation covered precisely what the Chairman was asking for.

Mr. RANDALL. It absolutely did in my opinon.

Mr. ECKHARDT. Now of course it may well be that the Secretary of Transportation just does not have it, because he obviously could not bring it together within a matter of a few months. But from what I have heard from the Alabama project, they have it.

Mr. RANDALL. At least the beginning of it.

Mr. ECKHARDT. I note to my great regret that in the next paragraph the Secretary of the Department of Transportation says:

"These projects completed their first phase of operation on June 30, 1976. Three of them have been extended until September 30, 1977. However, no additional analysis is planned by the Department. The staff has been reassigned to other projects and all programmed funds have been expended."

Now it strikes me that such activity is in the teeth of the congressional policy stated in the act.

Mr. RANDALL. Mr. Chairman, it has just been blatently obvious to me, both when I was a staff member for the Senate Judiciary and in my private capacity in my visits to the Department of Transportation, that this act has been torpedoed from its inception. I can say the fact it was torpedoed is fairly obvious when one looks at the position assignments and the job descriptions and titles given to the people there, and the number of people assigned to the task and to supervision of it, and the constant eroding of even the slightest vestage of earlier interest as we reached in the 1976 era. Had it not been, Mr. Chairman, for your amendment that you supported in the full committee in 1976 to amend, this act to create a new special project including fuel and conservation of fuel and emissions, the entire section would have been abolished except for a housekeeping group over there, and I am convinced of that.

While I do not have first hand information about it, I was told at one point, in fact on the day following the day that this law was signed by President Nixon, that when he signed it into law, present were Presidential assistants and some people from the Department of Transportation, and he indicated to them that he did not want anymore of these—expletive deleted—consumer bills before him, and given that kind of mandate, the Department of Transportation proceeded to send this thing to what I presume was the then considered to be Lower Slobovia, which was down at Buzzards Point.

Mr. ECKHARDT. He didn't have a bill before him then; he had an act, and he had the mandate of the Constitution that he should faithfully execute the laws, but considering the impoundment operations, I suppose this was entirely consonant with the program of discretionarily implementing or not implementing the laws passed by Congress.

I am in hopes, though, that in this administration we may have a more faithful observance of the constitutional mandate to faithfully execute the laws.

Mr. RANDALL. I viewed it in retrospect as being one of those things that he did from his heart for the consumers.

Mr. ECKHARDT. I suppose we still have a good deal that we could gain out of these programs with maybe a short extension and with a revitalized activity on the part of the Department of Transportation, because we have heard today that much of the type of information we were interested in in title III is at the present time available within the Alabama project, if it were simply asked for by the Department of Transportation and analyzed.

Of course, it isn't as good and extensive as it might have been for all the other projects which had been funded. The Alabama project apparently ran itself. It didn't get much aid from DOT, except from the original grants, and then it got a considerable amount of State funds from universities, as I understand it.

Mr. RANDALL. The major deficiency, of course, Mr. Chairman, is vehicles that examined were not the controlled, complex vehicles we have now with the emission control devices and new electronic equipment on them. So the tests didn't get into the era that is going to give us our greatest problem, and that is the more complex vehicles.

Mr. ECKHARDT. I suppose what that program really showed us most is already evident in this hearing, and that is that there is a need for inspection and an inspection can reduce unnecessary repairs.

Mr. RANDALL. Not just safety though, it has to be the combinatin of emissions, safety, noise, the whole gamut all across the board. Then you get a very cost effective program.

Mr. ECKHARDT. Surely.

Thank you very much, Mr. Randall, for your very competent and able testimony. I know there is no one who knows more about this act or more of its possibilities than you.

Mr. RANDALL. Thank you, Mr. Chairman.

Mr. ECKHARDT. The subcommittee is adjourned until Monday at 2:30 o'clock.

[Whereupon, at 6:05 p.m. the subcommittee adjourned to reconvene at the call of the Chair.]

MOTOR VEHICLE INFORMATION AND COST SAVINGS ACT OF 1972—OVERSIGHT

MONDAY, MAY 9, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON CONSUMER PROTECTION AND FINANCE,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 2:30 p.m., in room 2237, Rayburn House Office Building, Hon. Bob Eckhardt, chairman, presiding.

Mr. ECKHARDT. The Committee on Consumer Protection and Finance will resume its oversight hearings respecting the Motor Vehicle Information and Cost Savings Act.

The subcommittee is particularly honored to have the distinguished new Administrator of the National Highway Traffic Safety Administration, Ms. Joan B. Claybrook.

We are delighted to have you this afternoon, and you may proceed in the manner in which you see fit.

STATEMENT OF JOAN B. CLAYBROOK, ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION, ACCOMPANIED BY HOWARD J. DUGOFF, ASSOCIATE ADMINISTRATOR FOR RESEARCH AND DEVELOPMENT, AND FRANK A. BERNDT, ACTING CHIEF COUNSEL

Ms. CLAYBROOK. I am pleased to appear before this subcommittee today in response to your invitation to Secretary Adams, to discuss the Department of Transportation's efforts to implement the Motor Vehicle Information and Cost Savings Act. With me today are Mr. Howard Dugoff, Associate Administrator for Research and Development, and Mr. Frank Berndt, our Acting Chief Counsel.

I would like to address each title of the Cost Savings Act separately and answer the specific questions raised by the chairman's April 21, 1977, letter to Secretary Adams. This letter did not list title V, Improving Automotive Efficiency, which is the title establishing the automotive fuel efficiency program. Secretary Adams testified on title V before the Subcommittee on Energy and Power on April 25 and, unless you have specific questions, I will not speak to it today.

Since the agency's last testimony before this committee in 1975, the damageability bumper standard has been issued, to take effect in two stages on September 1, 1978, and September 1, 1979. The first phase specifies conformity with the existing safety bumper Standard No. 215, and requires that there be no breakage or release of fasteners or joints and no cosmetic damage to the exterior surfaces of the vehicle other than the bumper face bar and its attachment to the vehicle. The second phase prohibits significant damage to the bumper face bar and attachment as well. Just before he left office, my predecessor, John Snow, proposed to delay the September 1979 requirements for 1 more year.

You asked why it has taken so long since the 1972 enactment of the Cost Savings Act to have these standards go into effect. I am told that a large part of the delay had to do with developing damage criteria for the standard that would reduce the costs of low-speed bumper impacts. The requirements had to be strict enough to prevent unnecessary damage, but not so strict as to unnecessarily restrict possible bumper designs. Advances in bumper technology occurred as the agency went through the rulemaking process. Responding to these advances apparently caused some delay, but the staff believes we have a better standard as a result.

Under the act, the department must stipulate performance requirements for bumpers, but cannot stipulate features of design such as bumper geometry, structural configuration, or materials. Experience with the safety bumper standard has shown that manufacturers are capable of designing bumpers which minimize weight and cost penalties. New designs and materials have been developed which offer substantial confidence that the bumper standard will achieve the goals of title I, particularly given the pressure on manufacturers to reduce vehicle weight which derives from the title V fuel efficiency requirements.

John Snow's proposal to delay the second phase of the standard for 1 year in response to manufacturer petitions was related to the effects of the fuel economy standards under title V. The fuel economy standards are causing manufacturers to make widespread changes in their vehicles, and it appeared that making the bumper standard effective in 1980 would allow the manufacturers to make a more cost effective transition. We are in rulemaking now on the proposal and so I do not want to express my views on the issues contained in it at this time. Apart from those issues, all other petitions for reconsideration of the final rule were resolved in a decision issued last week. That decision denied all but very minor requests for change in the requirements.

You also asked about differences between the existing safety bumper Standard No. 215 and the upcoming damageability bumper standard for 1979 and later models. Standard No. 215 prohibits damage to safety systems such a headlamps and brakes, and requires integrity of other vehicle systems so that the vehicle does not become dangerous to operate. The impact tests in the new damageability standard are identical to the safety standard in number, type, and location, but there are additional prohibitions on

damage to vehicle exterior surfaces, including the bumper itself. One of the major differences we anticipate is in the technology that will be used to meet the new standard. Soft face, aluminum, and high-strength steel are all vying for use in the new designs.

Once the standard becomes effective, we will be carefully evaluating the specific design solutions selected by manufacturers to satisfy the requirements. To the extent that these solutions fall short of optimum technology, it may, of course, be necessary to amend the standard to assure that consumers receive the greatest possible economic benefit.

I would like to stop at this time and show a short film showing work the agency has been doing on bumpers. Mr. Dugoff will narrate.

Mr. DUGOFF. As you will see, this film illustrates some of our ongoing R&D which relates to bumper performance. There is no question as to the technical feasibility of bumpers which substantially exceed the requirements of our pending standard. The real questions about bumpers are practical ones: how much will they cost, how much will they weigh, can they be integrated effectively into a vehicle design which satisfies the various other societal goals for the automobile—fuel economy, safety, and emissions.

The car you are about to see is one of NHTSA's integrated research vehicles. These vehicles are helping us explore the tradeoff questions which are fundamental to our safety, fuel economy, and damageability rulemaking.

The damageability protection offered by the front of this research automobile is being evaluated in a variety of ways.

First, we see a head-on collision with a rigid obstacle at 8 miles per hour. The energy level for this crash was more than twice that which present-day 5-MPH bumpers can withstand.

A common accident on our street is a low-speed rear-end collision by a following car. This simulation of a 12-MPH rear-end accident resulted in no permanent damage to either vehicle.

A slow-motion view of this impact shows that the entire front deforms, then snaps back without damage.

The front end consists of a tough urethane plastic skin which covers an energy-absorbing foam. The weight is only 31 pounds—about half the weight of a conventional bumper which meets today's FMVSS No. 215 bumper standard.

We believe these bumpers are practical and mass producible, and our preliminary estimates of the incremental cost to the consumer are very encouraging—somewhere less than about $30 for both front and rear protection.

One of the major tradeoffs we have to look at in bumper design is that between damageability and pedestrian protection.

Each year 8,000 pedestrians, 25 percent of them children, die after contact with the front of moving automobiles. Approximately 100,000 are injured. The film shows, in slow motion, a driver's eye view of this awful experience.

NHTSA has conducted a number of tests with pedestrian dummies to evaluate ways of reducing the lethality of the front of automobiles.

The best countermeasure which has been tested to date is the damage-resistant bumper of the research safety vehicle.

Test results show that the shape and softness of this RSV bumper significantly reduce the severity of body responses for both child and adult dummies.

This is a comparison of dummies being impacted by the experimental bumper and a conventional bumper.

As a generality, the impact with this experimental bumper system is approximately equivalent to an impact with a present-day vehicle traveling at some 5 to 10 miles per hour slower.

These films are intended to give you some insight into the type of studies that we are conducting in order to balance damageability requirements with other goals—safety, fuel economy, emissions, cost, damageability, consumer protection and information.

TITLE II—AUTOMOBILE CONSUMER INFORMATION STUDY

Ms. CLAYBROOK. title II was enacted in the belief that consumers would understand and act on meaningful comparative ratings of automobiles in three areas: crashworthiness, damage susceptibility, and ease of diagnosis and repair of mechanical and electrical systems. I share this belief and I strongly believe that comparative ratings of crashworthiness particularly would be increasingly valuable as the percentage of smaller automobiles increases. I would like to pursue the purposes of title II vigorously, taking a pragmatic, results-oriented approach to see if we can provide meaningful ratings to the vehicle-buying public in the shortest time practical.

During my several weeks as administrator, I have attempted to evaluate the government's progress in carrying out title II. I have concluded that the Department has not pursued the program with sufficient diligence or enthusiasm since the passage of the act in 1972. Approximately $2.7 million has been spent to date with no useful results to the consumer. The fiscal 1978 budget, which was prepared before I joined the agency, has no appropriations for this title, and the manpower allowance has been cut from 10 to 5. At present, two of these positions are filled.

Notwithstanding the absence of progress in title II consumer information rulemaking, the agency has done a great deal of work during the last 10 years which is relevant to accomplishing the purposes of the title. For example, major rulemaking activities have produced standards to protect occupants in a crash, such as collapsible steering assemblies, door strength, roof crush resistance, and interior impact protection. In addition, for the last 8 years the agency has been actively involved in a rulemaking to improve occupant restraint systems during which it has acquired a vast amount of knowledge about crash survivability. In support of this rulemaking, the agency has engaged in extensive research activities in which vehicle structures, fuel system integrity, and test dummy performance have been evaluated.

The key task assigned NHTSA under title II is to design a program for development of comparative crash survivability and damageability ratings of new vehicles. The agency should be able within a few years to accomplish this task largely by building on the extensive body of related knowledge. Indeed, the agency has already developed basic comparative crash survivability informa-

tion and has developed some important test criteria for vehicle damageability.

In 1976, the agency completed testing of six 1975 compact automobiles for the purpose of selecting a vehicle to be used as a test bed for advanced technology restraint systems. The tests were barrier crash tests conducted at impact speeds of 45 miles per hour—a speed far in excess of that at which survival could be expected using current production restraint systems. The criterion for selection in this case was how much survival distance was left after the crash. Survival distance is a measure of the margin which is available to the restraint system in protecting the occupant. Ratings of these vehicles, based on the restraint survival distance criterion, are shown in the attached table.

The NHTSA routinely conducts crash tests of new cars to determine compliance with motor vehicle safety standards. In these tests, an automobile is crashed into a rigid barrier at 30 miles per hour. The agency recently measured the response of safety belted test dummies in such compliance tests as a basis for comparison with the dynamic crash test requirements of the passive restraint option in the occupant crash protection standard.

In this test series, nine cars produced useful comparative data. In the VW Rabbit, the Pontiac Sunbird, and the Chevrolet Vega, the head injury criterion was exceeded because the shoulder belts allowed the dummy's head to collide with the steering wheel of the car. The agency also measured the loading of the safety belts, because our research has shown that if the belt loading exceeds 1,500 pounds, it can cause chest injuries. Of the nine cars tested, the Chevrolet Nova and Vega, and the Pontiac Sunbird produced belt loadings in excess of 1,500 pounds.

As a cautionary note, let me stress that many questions about instrumentation and measurement criteria for comparative ratings were not explicitly considered in this testing because it was addressing other factors than consumer ratings.

Whereas the precise scope and timing are yet to be worked out, NHTSA will be seeking to develop the following elements of a meaningful comparative crash survivability information program:

1. An analytical scheme outlining the parameters of the system would have to be designed.
2. Specific test requirements would have to be prepared and demonstrated.
3. Testing designed to challenge the measurement requiremenmts to determine if they are appropriate would have to be performed.
4. A test protocol would have to be formulated by which each manufacturer would test most or all of its products to develop ratings.
5. Effective means would have to be developed to transmit the rating information to the consumer in a way that makes it possible to use the data in purchasing decisions.

The information probably would have to be disseminated by the agency as well as by the manufacturer with the vehicle. It is clear that such a task will take several years to perform adequately.

I am also hopeful about the potential for developing useful consumer information on damageability, diagnosis and repair under

title II. There are several other ongoing activities which might be able to provide appropriate damageability and repair information. Within the insurance industry, damageability ratings are developing, although they do not separate driver differences and historical effects from the vehicle's damageability characteristics. In the automobile maintenance industry, various manuals are routinely published that estimate the amount of time required to carry out maintenance operations by vehicle make and model. These, combined with maintenance schedules of the manufacturer, perhaps could form the basis in a rough way for estimating the comparative cost of normal maintenance on new cars.

Mr. ECKHARDT. Perhaps it would be best for us to take a short break right now. We will be back in about 10 minutes.

[Brief recess.]

Mr. ECKHARDT. Ms. Claybrook, you were about to start your film.

Ms. CLAYBROOK. Yes. Mr. Dugoff will narrate.

Mr. DUGOFF. This next filmclip illustrates some of the research we have done in support of safety standards development which, as Ms. Claybrook has pointed out, has direct relevance to the job of establishing comparative crashworthiness ratings. First we will look at some footage of the compliance tests in which measurements were made of the forces on belted dummies.

The clip shows barrier crash tests at 30 miles per hour. The cars are shown in the order of protection afforded to belted occupants.

The best car was the full-size Chevrolet.

A slow-motion replay of this test shows the violent motion of the driver and passenger dummies.

Instrumentation was placed on the dummies and on the shoulder belt. The vehicle's crashworthiness was rated based on its ability to minimize the force levels on the chest and to prevent or mitigate head impact.

The ratings of the remaining vehicles are as follows:

AMC Gremlin - 2

Ford Pinto - 3

VW Dasher - 4

Chevrolet Chevette - 5

VW Rabbit - 6

Chevrolet Nova—and these are getting into worse and worse treatment of the dummy.

Pontiac Sunbird - 8

Chevrolet Vega - 9

Each of the last four vehicles failed to provide acceptable levels of protection under the test conditions shown here.

Next we see a slow-motion replay showing the inadequate protection of the Pontiac Sunbird.

Next, note the driver head strike in the VW Rabbit.

The final shot in this sequence is a 30-miles-per-hour barrier test of a 1977 Toyota pickup.

NHTSA will be continuing these crashworthiness assessments which we hope will provide a basis both for improved safety standards and for consumer information ratings.

NHTSA has been particularly concerned with the safety of small-car occupants.

This film shows barrier crash tests of four small cars at 40 miles per hour. Here we are assessing the structure of production small cars. We concluded that even these small cars have the potential for 40-MPH crash protection.

We are also evaluating various methods of improving the protection which can be built into small cars.

Let us examine improvements for the Vega. You will remember the Vega scored lowest on our crashworthiness rating scale.

The belt system in a standard Vega is quite comfortable—even though most Americans do not use it. The dash provides 4 to 5 inches of knee room for the average size occupant.

This Vega is equipped with an air cushion restraint system. Knee padding has been introduced, but ample knee clearance remains. The steering column, steering wheel, and air bag for this system were adapted from standard GM parts by application of some recent technology developments.

This test demonstrated that the driver was protected at a speed of 32 miles per hour, and the speed could have been faster. Injury measurements were extremely low.

This is the same steering column air bag system that was sold in luxury-sized GM cars between 1973 and 1976.

For comparison we will now look at the performance of the standard Vega with the belt system with which it is currently equipped. There is a big difference.

In this series of tests we are evaluating the structure of 3,000-pound cars at 45 miles per hour. First is the Volvo. Here is a Mazda RX-4. An Audi 100LS, a Capri 2—this is in order of decreasing performance—an AMC pacer and a Chrysler Simca.

All of these cars have the potential for 45-MPH protection. We selected the Volvo for further testing.

In these tests, the green Volvos are equipped with advanced air bags. The orange Volvos are equipped with advanced belt systems.

Closing speeds for these crashes are up to 90 miles per hour.

In all tests shown, the advanced air bag provided adequate occupant protection.

Let us view a slow-motion replay of the air bag system in a 90-MPH closing velocity test. Injury measures for both the driver and passenger were below the standard criteria.

Next, let us view an advanced belt system in an identical test. Although dummy forces were higher than with the air bag, they again passed the standard 208 requirements.

The advanced air bag even protects the out-of-position 6-year-old child at 45 MPH, as shown in this test.

This is a condition that a lot of people worry about for air bag protection. In this test the dummy passed with flying colors.

We believe that these tests illustrate some significant advances which we have made in developing technology on which consumer protection and information standards could be based. We intend to continue to work diligently to focus this kind of work towards the development of ratings in order to inform the consumer of his choices in the marketplace as well as to stimulate the evolution of technology which is beneficial to the consumer interests.

Ms. CLAYBROOK. To continue my statement:

TITLE III—DIAGNOSTIC INSPECTION DEMONSTRATION PROJECTS

The 1972 legislation directed the initiation of 5 to 10 diagnostic inspection demonstration projects by January 1, 1974, to be conducted or supervised by the States which would undertake periodic safety and emissions inspections, including followup inspections after a defect is found and inspections upon transfer of a vehicle or its involvement in an accident. The inspections were required to provide specific technical diagnoses, data relating to vehicle-in-use standards, vehicle designs that facilitate or hinder inspection and repair, standardization of diagnostic systems and test equipment, the motor vehicle repair industry's capability and cost structure for the correction of malfunctions, the efficiency and cost-effectiveness of facility designs, and recommendations as to feasible reject levels for diagnostic projects.

Five projects were funded, in Alabama, Tennessee, Arizona, Puerto Rico, and Washington, D.C., with the participation of 66,000 automobile owners and a total of 125,000 inspections by June 1976, the initially established completion date for the projects. Three projects have been given continuing funding until September 1, 1977, from the remainder of the original funding. The projects produced evidence that diagnostic inspection would be beneficial to the consumer, and such inspection resulted in needed owner repairs of safety critical components, lower emissions, improved gas mileage, and generally lower overall repair and maintenance costs. Analysis of data from the first, second, and third periodic inspections show a statistically significant improvement in the condition of the vehicle safety and emission systems when compared with the first inspection as a baseline. A 5 percent improvement in fuel economy after tuneup was found in relation to a representative sample of fuel consumption data provided under day-to-day driving conditions for all vehicles.

I do not believe the department carried out this title of the law with enthusiasm, but rather narrowed the scope of the mandate as much a possible. A lack of coordination with the Federal Trade Commission at an early date—there was coordination subsequently—is apparent in the failure to develop important information about the probability of fraudulent repair following diagnosis. Defect information in agency files was not given to vehicle owners who passed through the inspection lanes. Nor was the inspection information used to supplement pending defect investigations. There apparently was no attempt to use the title III experience in the inspection lanes as the basis for developing comparative ratings under title II on the eae of diagnosis and repair. I can only conclude that these funds could have been far better spent.

The special diagnostic inspection program was added to title III by the Motor Vehicle and School Bus Safety Amendments of 1974, and was substantially revised in July 1976. The special project builds on the extensive field experience with the earlier projects. The budget request for seven positions in titles III and IV is now being considered by the House and Senate Appropriations Committees.

The 1974 mandate was to assist in the rapid development and evaluation of advanced inspection and diagnostic equipment suit-

able for high-volume inspection stations, and to evaluate repair characteristics of motor vehicles in a way to facilitate such evaluations by small garages. In the 1976 amendments, the project was focused specifically on research, development, and evaluation of such equipment for assessing safety, noise, emissions, and fuel efficiency aspects of the vehicle. Also, the amendments require the Secretary to evaluate existing diagnostic analysis and test equipment available for use in small garages and to report to Congress by July 13, 1978, as to the scope of research and development necessary to make such equipment compatible with state motor vehicle inspection and diagnostic equipment. The report must include assessment of the extent to which private industry can supply small garages with low-cost test equipment to monitor compliance with federal safety, noise, and emissions standards.

The basic contract which will evaluate state-of-the-art inspection and diagnostic equipment, capabilities of repair shops and diagnostic centers, and problems of new automotive technology, is about to be awarded. The results of the first contract will be used to develop high-volume vehicle inspection and diagnostic equipment techniques that are compatible with the simpler equipment that is available to small garages. The agency appears to be on schedule to provide you with the 2-year report on the compatibility of existing diagnostgic equipment in small garages with that in high-volume inspection centers. The report also will cover the extent to which low-cost equipment is available to monitor compliance with Federal safety, noise, and emissions standards.

The projects completed to date with government funding tell us there is a real problem in keeping cars properly adjusted. There is a potential for savings to consumers if they choose to have diagnostic tests performed in the future similar to those conducted by the government projects. The five original demonstration projects showed that the cost of a tuneup following diagnosis is generally paid for in fuel savings. This type of savings is important to the individual consumer and to the nation as a whole.

A well-conceived diagnostic program has the potential for reducing the lifetime operating costs of an automobile, something consumers often do not fully consider in the initial purchase of their car. Independent diagnosis can help to avoid the unnecessary repairs that we all hear about, and it can pinpoint needed repairs that have a great payoff in safety, emissions control, and fuel efficiency.

TITLE IV—ODOMETERS

In the last Congress the department sought amendments to title IV to authorize an effective odometer fraud enforcement program. Through the efforts of your committee and the Senate committee, these amendments were enacted on July 14, 1976, and provide both civil and criminal penalties for odometer violations. To this point, the new enforcement authority has not had a fair test, but we are encouraged by the success of initial actions brought by United States attorneys. In the most recent of these cases, the United States Attorney for Minnesota has obtained indictments against 10

individuals alleging a widespread scheme of odometer fraud involving 120 separate instances since July 1976. The state attorneys general have also made use of the authority conferred on them under title IV to bring actions for injunctive relief and restitution. Actions have begun in four States under this provision of the act.

The last administration proposed three permanent positions for fiscal year 1978 to begin the department's enforcement activities under title IV. We will not be certain whether that is enough or whether any large permanent staff is necessary until we have had an opportunity to assess the States' efforts in this area.

We are unable at this date to determine whether the amendments have affected the practice of odometer spinning. The industry and trade publications and associations have done a good job of publicizing the new penalities, but no one has accurate information on whether the practice has diminished. At the moment, the Department of Justice and the United States attorneys have approximately 16 investigations in progress. We expect to gain a good deal of information from the discovery and grand jury proceedings associated with these investigations. At the same time, we are improving the odometer disclosure statement required in each motor vehicle transaction to eliminate ambiguities that have impaired its usefulness.

Mr. Chairman, this completes my prepared statement. My associates and I would be pleased to answer whatever questions you may have.

[The following attachments were received for the record:]

SEAT BELT PERFORMANCE IN 30 MPH BARRIER TESTS

Vehicle Make and Model	FMVSS No. 208 Req'm'nts Exceeded	1,500 Lb. Shoulder Belt Load Exceeded
Chevrolet Impala	No (64%*)	No (80%*)*
AMC Gremlin	No (78%)	No (89%)
Ford Pinto Pony	No (84%)	No (91%)
VW Dasher	No (88%)	No (95%)
Chevrolet Chevette	No (92%)	No (99%)
VW Rabbit	Yes (143%)	No (85%)
Chevrolet Nova	No (99.7%)	Yes (114%)
Pontiac Sunbird	Yes (144%)	Yes (121%)
Chevrolet Vega	Yes (140%)	Yes (128%)

* % of allowable head injury critera (hic less than or equal to 1,000) chest injury criteria were met in all tests

** % of 1,500 lb. shoulder belt load

RATING OF SELECTED 1975 COMPACT CARS BASED UPON RESTRAINT SURVIVAL DISTANCE

Vehicle	*Restraint Survival Distance—Inches*
Volvo 244	10.5
Mazda RX-4	7.0
Audi 100-LS	5.4
Capri II	2.6
AMC Pacer	1.4
Chrysler Simca	0.5

Mr. ECKHARDT. Ms. Claybrook, the committee wishes to thank you for presenting a very complete statement and also punctuating it with film illustrations. I think this has been a very excellent way to present the points.

I am concerned about the proposed delay of the bumper standard that your predecessor, Mr. Snow, commenced. I would like to know whether you intend to conduct a hearing before taking action on the petition concerning delay, because the relevant section of title I states that:

"All rules establishing, amending or revoking a bumper standard under this title shall be issued pursuant to section 553 of title V of the U.S. Code, except that the sectetary shall give interested persons an opportunity for oral presentation of data, views or arguments."

Ms. CLAYBROOK. As I understand, the statute requires a public hearing.

Mr. ECKHARDT. That is section 102 (e)(1)?

Ms. CLAYBROOK. Right.

Mr. ECKHARDT. No hearing has yet been held, though?

Ms. CLAYBROOK. No, it has not.

Mr. ECKHARDT. Of course, as a result of the consideration of this petition, you may reevaluate the question of whether or not to put into effect the delay?

Ms. CLAYBROOK. That is correct.

Mr. ECKHARDT. I suppose a lot that I have to say here on the question may have to do with water that has already gone under the bridge with respect to what the agency has done about implementing this act.

I really do not mean to go into great detail on that because I think you have already stated here that, with respect to the implementation of titles I, II, and III, the agency has operated without an over amount of zealousness in accomplishing the congressional objective.

Ms. CLAYBROOK. I am not sure I said that as to title I but I certainly did as to titles II and III.

Mr. ECKHARDT. I would add, from what we have already heard in this hearing, that it does appear that at the very least the agency gave an extremely high level of credibility to the arguments by the industry that more damage resistant automobile bumpers may not be a cost effective means of reducing damageability.

We have seen automobiles, as a matter of fact I even drove in one back in 1972 as I recall, before the passage of the act, that met the standards at that time. Yet there was a 1974 DOT study and a number of auto-maker studies as to the costs and benefits of damage-resistant bumpers. They presented an apparently difficult question.

We received a document for the record earlier critical of those studies on grounds that they inappropriately only evaluated the heavy bumper designs chosen by the manufacturers to comply with the existing and proposed standards.

I think you have stated in your own testimony, and the films that you have shown indicate, that we do not necessarily envisage heavy bumpers.

Ms. CLAYBROOK. No, I do not think it is a necessity at all. We set standards of performance, not standards of design, however.

Mr. ECKHARDT. Surely.

Ms. CLAYBROOK. One of the ways of undermining the standards that we set is to meet them in the most inefficient way. The early in response to the standards of standard 215 was met in a most inefficient way. I think there have been a lot of improvements since that time.

Mr. ECKHARDT. I think there is sometimes a tendency also to meet in very literal ways the performance standard compliance tests, so that although the design passes the tests the overall performance may be unimproved or even lowered. After all, the tests must be to a certain extent arbitrary.

One would think that if the automobile manufacturers were acting in good faith they would be willing to put a little bit more into the design that meets practical objectives. As a matter of fact, it seems to me from your films here that there can be built into the question of repairability the question of reducing injury to pedestrians which might not be actually called for by an existing standard, but the difference in cost might be so slight as to create a tremendously valuable social advantage.

Ms. CLAYBROOK. Also, we do have authority under the Vehicle Safety Act of course to issue standards for pedestrian protection, and the agency has not done so to date. It is a tough standard to write. It has never gotten the kind of visibility and priority that I think it deserves.

One of the problems that we face is really to put those various issues together in the issuance of a bumper standard. However, I would point out, Mr. Eckhardt, that the Cost Savings Act does put a lot more priority on cost assessment than does the Vehicle Safety Act, in terms of the responsibilities on the administrator to consider those issues, and certainly one of the big problems in the bumper area is that we do not have very much information on the actual cost savings to owners.

There are a lot of folks with small damage to their bumpers who would just as soon leave it that way. So you cannot say that because a bumper costs X dollars, if it gets a small dent in it you cannot presume that a person is going to go out to replace that bumper. You know, a 5-miles-an-hour collision puts in some cases a relatively small dent into some bumpers, and when people talk about having to spend their money, they may not want to spend it on that particular bumper.

Mr. ECKHARDT. That is right. Of course, your first standards have to do not with the cost of the bumper but actually to how the bumper protects the rest of the car.

Ms. CLAYBROOK. That is right.

Mr. ECKHARDT. We saw on films the other day that the bumper seemed actually designed to cause injury itself to the lower part of the front fenders. That struck me as a rather peculiar method of design, unless of course——

Ms. CLAYBROOK. Is this 1977 model cars? Or is it 1976?

Mr. ECKHARDT. Yes.

Ms. CLAYBROOK. One of the problems when you set standards is if the standard emphasizes one aspect the industry designs to meet

that aspect. Then other elements are deemphasized or are not taken into consideration because they do not have to meet the standard.

Mr. ECKHARDT. Of course what they obviously were designing these bumpers for is to prevent injury to any of the safety mechanisms of the car, but they were apparently absolutely oblivious to the cost of repairs. We saw enormous cosmetic damage to the car. And of course cosmetics is not like smearing rouge on one's face, the damage costs a good deal more.

But it really does surprise me how slowly both industry and the agency have proceeded under title I. The bill was designed largely as a cost-saving measure, but that is a very objective test, and we can carefully measure and analyze the way in which the design of the bumper has affected the cost of repair. We cannot always so easily measure the question of how the design of the bumper has reduced injury. So what we were attempting to do is that which is available and obtainable and I do not think that there is anything in conflict between lessening cost of repair and making the bumper also consonant with safety, is there? Or do you feel there is?

Mr. DUGOFF. It is a challenge but the film we looked at a while ago demonstrates quite convincingly that both purposes can be achieved simultaneously.

Mr. ECKHARDT. What do you think about this? Does the congressional mandate to perform cost-benefit analysis need further clarification?

Ms. CLAYBROOK. Do you mean in this statute?

Mr. ECKHARDT. Yes.

You might just be thinking about that? That is the second bell. I will be right back.

[Brief recess.]

Mr. ECKHARDT. I think my pending question was, does the congressional mandate to perform cost-benefit analysis need clarification.?

I might add in that connection that I gathered from your testimony that there might be something in between a bumper standard that purported to protect everything but the bumper and a bumper standard that would be 100 percent perfect with respect to no damage.

For instance, I can conceive of a situation in which there might be some slight cosmetic—I am using that term again—damage to the bumper itself that would still not be of great enough significance to offset certain other advantages that might exist with respect to that bumper.

Ms. CLAYBROOK. Yes, I think that is true.

Mr. ECKHARDT. I would be particularly concerned if such a minor proposition delayed the effective date of the standard, but I do not think we statutorily tie you into a rigid mold in that respect, do we?

Ms. CLAYBROOK. No.

Mr. ECKHARDT. Do you feel that you have enough flexibility with respect to the statute to accomplish the desirable objectives of the act?

Ms. CLAYBROOK. I think so. As to costs, it says the costs of implementing the standard and the benefits obtainable as a result of implementation of the standard and, when you measure the

benefit, one of the considerations is, will the cost of repair be less as a result of this standard?

Another consideration is, will there not be the necessity for repair after the standard's implementation where there would have been that necessity before?

One of the unknown factors is the extent to which consumers are going to feel constrained or not feel constrained to replace their bumpers when there is a small amount of damage. In other words, there may be a very large savings because where they see a small amount of truly cosmetic damage, they may say, I am not going to replace that bumper. Then you may have a rather large saving.

Mr. ECKHARDT. I note that consumers are becoming more and more unwilling, with increased costs, to do that. You see more cars driving around with their bodies caved in than you did a few years ago.

Ms. CLAYBROOK. It is a matter of priority, how you want to spend your money, I would think.

Mr. ECKHARDT. I would like to talk about title II.

Now, let's assume again that much water has passed under the bridge and there is nothing we can do to change what occurred in the past on title II.

However, I understand from previous testimony that certain private insurance operations and certain private groups have obtained some information along the lines provided in title II. As a matter of fact, the insurance industry seems to think that that is an adequate way to obtain information to evaluate it under title II

Ms. CLAYBROOK. What is an adequate way?

Mr. ECKHARDT. To do it through the industry examining the question of the effect of repairability on insurance costs, et cetera. But it strikes me that there might be other interests involved concerning the public that the industry or those motivated to examine the matter separately would not have.

Do you have a view on that point?

Ms. CLAYBROOK. In the 3½ weeks that I have been in office I have not had a chance to develop a position on that. My only attempt in preparation for these hearings was to try to query the experts in the agency to find out why action has not occurred under this title and whether or not there is a presumption that it is feasible.

In my view of the three issues in title II, the one that I think is most important is crash survivability. I think the damageability is less important. I think the health and safety issue is always primary and if the agency were to take any action under title II, first I should think it would take it under the crash survivability portion. Indeed, if the industry is able to develop this information itself, it seems to me a waste of federal funds for the agency to do it.

Mr. ECKHARDT. It does seem to me though that it is necessary for the agency to receive and analyze the information which has been obtained through private sources. To what extent does the agency have personnel to do that at the present time? What staff is assigned to title II at the present time?

Ms. CLAYBROOK. I testified that there are two individuals assigned to title II at this moment. As I understand it, one is on sick leave and one is on loan to another office.

Mr. ECKHARDT. I wonder what is planned with respect to that situation? The sick leave person I guess can eventually come back, and presumably the one on loan might be reassigned, but that does not seem to give much prospect of even analyzing available information, say, from the industry.

Ms. CLAYBROOK. No, that is right.

I do want to point out that the industry has only recently in the last couple of years really developed this information and it was really unbelievable they did not do this themselves. But they have now, I think under the auspices of the Insurance Institute for Highway Safety and insurance related organizations, begun to develop this information but we have not looked at it in any level of detail. We have looked at it briefly recently, but beyond that we have not done any analysis that I know of.

Is that correct?

Mr. DUGOFF. It is a value judgment. There are individuals on our staff who consider that it has been analyzed adequately.

I think it is fair to say that the new administration intends to take a much harder look at this, along with each of the matters under titles II and III which we have characterized as having been pursued in the past with less than the degree of diligence that we see as appropriate.

Mr. ECKHARDT. Now there are several questions that you would need to look into there. One is what kind of standards would give a fair comparative consideration of various makes and models. Has anything been done along those lines either by the agency or by the industry?

Ms. CLAYBROOK. Well, you are concentrating on damageability standards and I do not think the agency has done much work at all in that area.

On crash survivability we have a much larger body of knowledge. That is point one.

Point two is that the agency did in the late sixties issue three consumer safety regulations under the vehicle safety statute. So they do have some experience with what is involved in writing this kind of regulation for comparative testing and the getting of that information from the automobile manufacturers.

The way they did it under those earlier consumer safety regulations was to write a testing regulation and require the submission of the data to the agency by the early part of the model year. That information then came in and was organized in a booklet published and distributed through dealers and through the agency itself.

Mr. DUGOFF. Mr. Chairman, the fundamental problem that we have with the insurance-derived data is that the industry is not motivated as are we to discriminate between the differences that are intrinsically associated with the different cars as opposed to the differences associated with the different populations of people who buy those cars.

It can be argued that certain models of automobiles are purchased by a class of driver who is intrinsically more disposed to take risks. From the standpoint of the industry, just as long as it knows what body of buyers are buying the car and what the damage done by the cars with those drivers is, that is fine. But we need to

know separately the effect of the design characteristics of the automobile as opposed to the typical characteristics of the people who buy them.

So we have to be able to sort out those two effects. The insurance data do not give us the handle on how to do that.

Mr. ECKHARDT. This subcommittee has had a good deal of experience with the industry in several different areas, including no-fault.

Mr. DUGOFF. Right.

Mr. ECKHARDT. It has been my observation that the industry is very, very concerned about that kind of injury that is not predictable. They would like to bring predictability into the picture.

They are not necessarily advantaged by reducing the ultimate cost. As a matter of fact, to a certain extent the more completely society is insured, even if that insurance is relatively costly, this is no skin off the insurance industry's nose.

Now that is what troubles me about a failure to consider the question of repairability. In the area of bodily injury, the cost is an unmanageable cost and the industry never knows what the extent of their risk may be. Naturally, they want to bring that within manageable levels. But what currently concerns me is whether any business, or anyone responding to a business interest is very much concerned about the cost of repair.

The crash parts industry is perfectly happy with very high costs. And as long as the costs are predictable the insursance industry is not terribly unhappy about them. I do not see why they should be, put it that way. The only people that are really unhappy are the consumers.

Ms. CLAYBROOK. Yes. They are going to pass costs along and they end up ultimately in the consumers' laps.

Mr. ECKHARDT. Of course, if we are in a habit of spending a very large part of the total pay on automobiles, why that is a very happy situation for the automobile manufacturers, the parts manufacturers, the insurance industry, the oil industry, and everyone else. But it seems to me that it is our burden to try to reduce that cost.

Now I do not for a moment mean to imply that the question of personal injury is not the major concern for most people, but the question that I have in my mind is whether or not the second concern, cost of repair, is going to be paid much attention to unless government does it.

Ms. CLAYBROOK. I think the answer is probably not.

It certainly isn't within the mandate of title II and the obligations of this agency. I pointed out that I felt that the crash survivability data was probably the most important and should be given first priority. That is not to say that the others shouldn't be attended to. One of the real disappointments to me was in looking over the information under the title III diagnostic work where they were very intimately involved in repairs and the cost repair, repairability and so on. From what I can tell—and I am subject to correction because I have only had a chance to look at it very briefly—I don't think the groundwork was laid in the title III work for developing repairability and consumer regulations and that is really too bad.

Mr. ECKHARDT. Let's stick with title III for a moment because I do want to talk about title III.

Ms. CLAYBROOK. As to title III, there were funds spent doing a lot of work that, had it been organized in a slightly different fashion, might have been used to lay the groundwork for issuing regulations on repairability without the agency having to do a great deal of additional research and preparation in order to prepare those regulations.

Mr. ECKHARDT. It seemed to me in the testimony the other day that a great deal more could have been accomplished under title III had there been a plan to coordinate information from the various projects paid for under the grants, had there then been some means by which information was collected and coordinated in order to draw detailed conclusions from it. I have not seen much of that type of thing done in the planning of title III.

Ms. CLAYBROOK. Well, I think that is true. There are some conclusions that can be drawn but I don't think it was correlated enough. Also within the agency, as I point out in my testimony, it was an unfortunate fact that we have an office that is investigating defect problems and yet those problems were not made part and parcel of the diagnoses of 66,000 automobiles. nor was the information taken from those 66,000 car inspection and turned back to the Defect Office for evaluation in furtherance of their investigations. It really is most unfortunate.

Mr. ECKHARDT. This entire program under title III is at present, planned to be ended within a relatively short time.

Ms. CLAYBROOK. That is right. There is a special follow-on or additional project that came in more recent amendments, but that is right, September 1977 is the end point for the remaining three diagnostic activities.

Mr. ECKHARDT. From the testimony we got from the people in the Alabama project, that seems to me to have been a very effective project even if the information thus garnered is simply thrown away. It has been valuable it seems to me by virtue of the fact that it has curbed unnecessary repair; the very investigation itself has generated certain consumer savings, as I would draw.

Ms. CLAYBROOK. Well, I don't disagree with you but you have to ask the question whether or not that would warrant such a program again or a continuation of it. It is pretty expensive to the Federal Government to put on these projects. It seems to me that their purpose was to look for solutions of a more generic nature rather than just helping the people in that particular area of Alabama.

Mr. ECKHARDT. I agree with that, but I rather gathered that even the information presently garnered had not been fully reported and fully obtained by DOT. I don't think some of the results have even been asked for by DOT with respect to that project.

Ms. CLAYBROOK. Well, I don't know the answer to that. I asked that question and was told that, by and large, the information that was discovered during the course of the different diagnostic inspections was put into the computer and is available. Although some of it was not put in the computer, it wasn't felt to be terribly important and there wasn't the kind of money to do that analysis. So there is the raw data, if you will, and there is also the computer data.

Mr. ECKHARDT. The FTC was asking for information from that project as I understand.

Ms. CLAYBROOK. I must say I am a little frustrated about this FTC business because I have been told over and over again the FTC wants information. I have asked the staff if they have given the FTC what they wanted and they told me they have given them everything they have.

Mr. ECKHARDT. But the question is: Have they gotten it from the project files?

Ms. CLAYBROOK. They can have anything that they want. They have been given access to the computer tapes, to the raw files, to the final reports, to the draft final reports. But what the FTC wants from our agency as I understand it is an analysis of data. That costs a lot of money and there is no money there to do that analysis and it is also very specifically geared to a specific proceeding that they are involved in on repair fraud.

Now, it is my view that this project probably, if it had in its initiation, included certain additional pieces of information to be developed—for example, the names of the different repair stations, whether they had mechanics who were trained, whether or not they used flat rate manuals, and so on—if that information had been put in the computer and had been asked for at an early date, it probably would have been useful to the Federal Trade Commission's analysis. But it wasn't and it wasn't done. To go back and redo all of that is astronomically expensive and to do some of the analysis of the existing computer data is quite expensive. The Federal Trade Commission is most welcome to any information, any data, anything there is that exists to take and do with it what it wants.

Mr. ECKHARDT. Well, now the act says each project shall provide to the Secretary information and data relating to the development of diagnostic testing equipment designed to maximize the interchangeability and interface capabilities and so forth and goes on to say "the capability of the motor vehicle repair industry to correct diagnosed deficiencies or malfunctions and the costs of such repairs."

Now the Federal Trade Commission asks DOT for analysis of this data and further collection of data—it says "Analysis of this data and further collection of this data could reveal, for example, the extent of consumer economic loss resulting from unnecessary repairs particularly components of different types of repair outlets."

Now the Alabama people said that was one of their specific observations and the Alabama project staff told our staff that almost all of this information exists in their project.

Ms. CLAYBROOK. In raw form?

Mr. ECKHARDT. Including repair receipts.

Ms. CLAYBROOK. In raw form or in computer data?

Mr. ECKHARDT. Well, they say it would not take much effort to analyze this from the information they have got and they said that they would be willing to lend their program to other projects to analyze their data.

Ms. CLAYBROOK. Well, as I understand it, this agency several months ago introduced the Alabama people to the Federal Trade Commission people. So I don't know what the problem is.

Mr. ECKHARDT. Is there not data in the other projects as well?

Ms. CLAYBROOK. They can have the——

Mr. ECKHARDT. The thing of it is it is only your agency that can reach these projects to which you would make grants directly.

Ms. CLAYBROOK. What do you mean can reach them?

Mr. ECKHARDT. I mean the Federal Trade Commission can hardly command.

Ms. CLAYBROOK. They can have it and they have been offered it. They can have the computer tapes and the raw data; they can have the contractor reports; they can have anything in the whole world that they want. I don't know what it is that they are asking for.

Mr. ECKHARDT. The DOT will not do the analysis of the information?

Ms. CLAYBROOK. No, that costs money. We would have to get a contractor to do that. If the Federal Trade Commission wants to pay for it, we will get it done.

Mr. ECKHARDT. As I read it, the Act requires you to do that and DOT has simply refused to abide by the congressional mandate.

Ms. CLAYBROOK. Where does the act require it?

Mr. ECKHARDT. FTC does not require it.

Ms. CLAYBROOK. Where does the act require us to do that?

Mr. ECKHARDT. Each project shall provide to the Secretary, and this is section 302 of (b)(5), information and data relating to the development of diagnostic testing equipment designed to maximize the interchangeability and interface capability of test equipment. Then it goes on to say; "The capability of motor vehicle repair industry to correct diagnosed deficiencies or malfunctions and the cost of such repairs, the relative costs and benefits of the project, the efficiency of facility design, recommendations as to feasible reject levels which may be employed in any such project and such information and data as the Secretary may require."

Now is it the DOT's position that all you do is get in raw data and say anybody who wants this raw data may take it and analyze it for themselves?

Ms. CLAYBROOK. No.

Mr. ECKHARDT. As I read this is a mandate by Congress that you get this information for some purpose.

Ms. CLAYBROOK. As I understand it, we have done that and submitted all those reports to this committee and we have also submitted all those reports to the Federal Trade Commission. As I understand further, that is not what the Federal Trade Commission is after. What they are after is information about the different repair stations and the characteristics of the repair stations and whether or not there was actual fraud committed between what the diagnostic unit said should be done to the car and what the repair facility actually did to the car, which characteristic of repair facility—

Mr. ECKHARDT. I understand they want something more than raw data. They want an analysis but they don't necessarily want an analysis of fraud. That is their business.

Ms. CLAYBROOK. Right.

Mr. ECKHARDT. But if the information is to be gathered together under a mandate of the act, the Federal Trade Commission simply

wants an analysis of this data and further collection of data which might reveal——

Ms. CLAYBROOK. What is the further collection of data? Because the project is just about over. If they are going to require further collection of data, that is what I think is the core of this issue. As I understand it, these projects phase out in 3 months; they have been structured for 2 years and certain data has been required to be collected during the course of these projects.

Now the Federal Trade Commission comes in and says they want different data to be collected, that caused——

Mr. ECKHARDT. Let's cut out that further collection of data and just say: Suppose the Federal Trade Commission wants you to get the data that has been collected by these various projects and wants you to present them with that data in some kind of organized way. As we understand it the Alabama project is able to present this in a digested form, not just as raw data.

Ms. CLAYBROOK. I understand that is——

Mr. ECKHARDT. That is not a bunch of receipts.

Ms. CLAYBROOK. That has been done and given to this subcommittee and given to the Federal Trade Commission.

Mr. ECKHARDT. How about the other projects?

Ms. CLAYBROOK. As to all of them, as far as I know.

Mr. ECKHARDT. I think only the Alabama project.

Ms. CLAYBROOK. I see. As to the other projects, apparently there wasn't the same kind of similar in-depth study. The money available for these projects was used, Mr. Chairman, and a decision was made and I do not know why, that the Alabama one would be done in more depth than the others. So an analysis has not been done as to the other four diagnostic facilities. There is no money available as far as I know, for us to do that at this time.

Mr. ECKHARDT. So the other projects merely collected data but did not analyze them.

Ms. CLAYBROOK. That is correct.

Mr. FOSTER. A little bit in perspective, sir, if I may. Each project conforms with the specific requirements of the act, to gather information and data. This specific information was gathered at each project by system and by type of repair station, dealer, specialty house—Midas, Amoco, this kind of thing—down to a small garage. We had five categories of garages. We have that from each project. This has been given to——

Mr. ECKHARDT. So this is uniform with respect to Alabama and the other projects.

Mr. FOSTER. Yes, sir.

Mr. ECKHARDT. But Alabama has analyzed——

Mr. FOSTER. Alabama had a unique capability at the university there. They offered a program to make an in-depth analysis and we went along with it. We have been very pleased to read it. We have provided that information to FTC.

Mr. ECKHARDT. What our staff has obtained from the Alabama project is a statement to the effect that they not only have supplied their own data and have analyzed it, but that they have also programmed that data for computer analysis and, assuming the

same raw data is available in other areas, they are capable of using their computer analysis with respect to the other projects.

Ms. CLABYROOK. How much would it cost? Did they tell you?

Mr. ECKHARDT. We could find out. But I think you ought to find that out. Does Congress have to investigate on whether or not the DOT is performing its duty under an act of Congress?

Ms. CLAYBROOK. No. You said they could do it, I just wonder how much it would cost.

Mr. ECKHARDT. Would your agency find that out? Find out within the mandate of our order——

Ms. CLAYBROOK. Yes.

Mr. ECKHARDT. I think merely collecting data and having within one's reach in a period of months the capability of putting that data together, and merely contending that the agency is not under the mandate of Congress to do it——

Ms. CLAYBROOK. I didn't say it wasn't under the mandate of Congress to do it.

Mr. ECKHARDT. I know, but I think that is what Secretary Adams said in his response to this letter to the agency.

Ms. CLAYBROOK. I would be delighted to do that. I think if the Federal Trade Commission wants some unique analysis of this, I think the Federal Trade Commission ought to pay for it.

Mr. ECKHARDT. I think that is true too, unless it is required under the act. As I read the Act it is required under the act.

Ms. CLAYBROOK. As I have said the prior administration read this act literally. The section 5 that you read to me talks about information and data and the gathering of information and data, and it does not talk about the drawing of conclusions, as I read this section very quickly now. But there is no reason that the agency cannot do that. The problem that we now face is that the money that was appropriated has been spent and I presume that the work that the Alabama folks are talking about costs a good bit of money. I don't have any idea. I don't want to speculate on what that cost may be, but the fact is we don't have the money to do it right now as far as I understand it. Maybe the most efficient way is for the Federal Trade Commission and ourselves to split the cost of doing a further analysis or some analysis at all of the other four diagnostic activities.

Mr. ECKHARDT. Well, as I understand your present situation, you have an authorization which may or may not be completely appropriate. I would hope that we might help you come closer to the point of getting your total authorization appropriated if we felt that the agency would utilize such money in making these long studies, which have cost a great deal of money, and as I think you have said, the money has not been altogether well spent. But it would seem to me most desirable that we make the most of them now. Collection of the data was a highly expensive project and to simply get raw data and let it go down the drain at this stage, it seems to me, would be a terrible waste of Federal money.

Ms. CLAYBROOK. I do not disagree with that.

Mr. ECKHARDT. We might use Alabama's facilities to complete a project which unfortunately has not been completed as I see it under the mandate of the Act.

Ms. CLAYBROOK. The only question I have is whether or not the authorizations in section 321 by year can be used in this fiscal year, but we will check that and get back to you. Although the authorizations in section 321 are by year, the sums appropriated under that section are available until expended and therefore can be used in this fiscal year. However, no contract funds were appropriated for title III activities in fiscal year 1977, and none are included in the fiscal year 1978 budget request now before Congress. With respect to previously appropriated funds, there is an uncommitted balance of only $12.5 thousand which would be insufficient to finance the additional data analyses contemplated by the FTC.

Mr. ECKHARDT. I believe it is by year.

Mr. DUGOFF. Mr. Chairman, one important distinction. We will certainly examine the facts here and make a determination if there are any additional analyses which we deem to be appropriate to properly discharge our responsibilities under the act, and we will make the strongest efforts to make the appropriate arrangements to do them.

However, to the extent the Federal Trade Commission's interest is characterizing the performance of individual commercial establishment, we do not see it within the purview of our responsibility under the act We will make as comprehensive and precise analyses as we can of the generic classes of repair establishments, but I do not believe we can construe our responsibilities under the act as extending to making assessments of the propriety of the actions of individual commercial establishments.

Mr. ECKHARDT. I do not think that is mandated under the act, nor do I think that is the objective of the Federal Trade Commission. It is not looking toward unfair deceptive practices but rather to examine the whole question of whether unfair and deceptive practices are being perpetrated whether or not a rule might be made in this area.

Ms. CLAYBROOK. I think they wanted to do it, though, by different characteristics of repair facilities than we originally selected. In other words, they were interested in whether or not the repair facilities had use of a flat rate manual, trained mechanics, as to whether or not they appeared to be involved in some fraudulent activities. The only way you can gather that information is to see how many different times they repair a certain car and whether or not they did commit fraud and the other characteristics; not to go after them for deceptive practice but rather to do some characterization of what your generic rules should cover.

Mr. ECKHARDT. I suppose statistics would show about 30 percent of repairs are unnecessary repairs and would undoubtedly embrace these practices and come to the conclusion that 30 percent of the repairs are unnecessary, and have some further examination made as to why they considered them unnecessary.

It would seem to me that would be most helpful to the Federal Trade Commission with respect, for instance, to formulating a rule. I do not know precisely what rule they would formulate, but we on this committee have established a very due process-oriented proceure for such rulemaking.

If money were appropriated, is a period of time between now and September 30 sufficient to do the study?

In other words, I understand you could extend the project without legislative mandate—or could you? Actually, I am surprised that we do limit that title to September 30, so if you need more time we would have to give you more time statutorily.

Ms. CLAYBROOK. There are two different issues: One, whether or not to extend those particular three projects and continue to collect data, maybe even change what they do collect. Another issue is the analysis of the data you already have.

Mr. ECKHARDT. I am not sure you would need statutory authority because the project would in effect be completed and if you were doing anything further it would not be a part of the project but an an analysis by the agency itself, which I presume you could contract out under existing authority.

Ms. CLAYBROOK. I do not think there is any question we can do that, but I doubt we could do it in this fiscal year which ends October 1.

Mr. ECKHARDT. Since the authorization I think is until expended, you would not be limited in that respect.

Ms. CLAYBROOK. We will only be limited in appropriations to that now being considered.

Mr. ECKHARDT. It does seem a pity to let data which has been developed go without its full use. If there is any way this subcommittee or the committee or any of its members might aid in obtaining funds for that purpose, it would seem to me that would maximize the use of the projects. Such a considerable amount of money has already been spent for the projects themselves.

Much of the questioning here and much of the discussion which has perhaps called for maximizing the agency's effectiveness I am afraid has stemmed from previous action over which you had no control. We look forward to cooperating and working with you closely, and thank you very much for your testimony.

Ms. CLAYBROOK. Thank you.

Mr. Chairman, I have several submissions for the record in response to your letter, items that were not covered by my written testimony, and also a piece of information that comes from the Norweigan bumper manufacturer who makes great claims about his capabilities of supplying a bumper that meets our 1980 proposal at 10 miles rather than 5 miles, at a relatively small cost and of a relatively light weight.

Mr. ECKHARDT. Without objection, it will be inserted in the record at this point.

[The information referred to follows:]

NORWEGIAN 10 MPH BUMPER SYSTEM

Raufoss, a major Norwegian bumper manufacturer that supplies bumper systems to Volvo, Audi, Rover, Saab, and Porsche, submitted information on a bumper system it has developed which is capable of meeting the second phase requirements of Part 581 at 10 mph (the second phase requirements prohibit any damage to the vehicle, except dents to the bumper not exceeding 3/8 inch and bumper set not exceeding 3/4 inch).

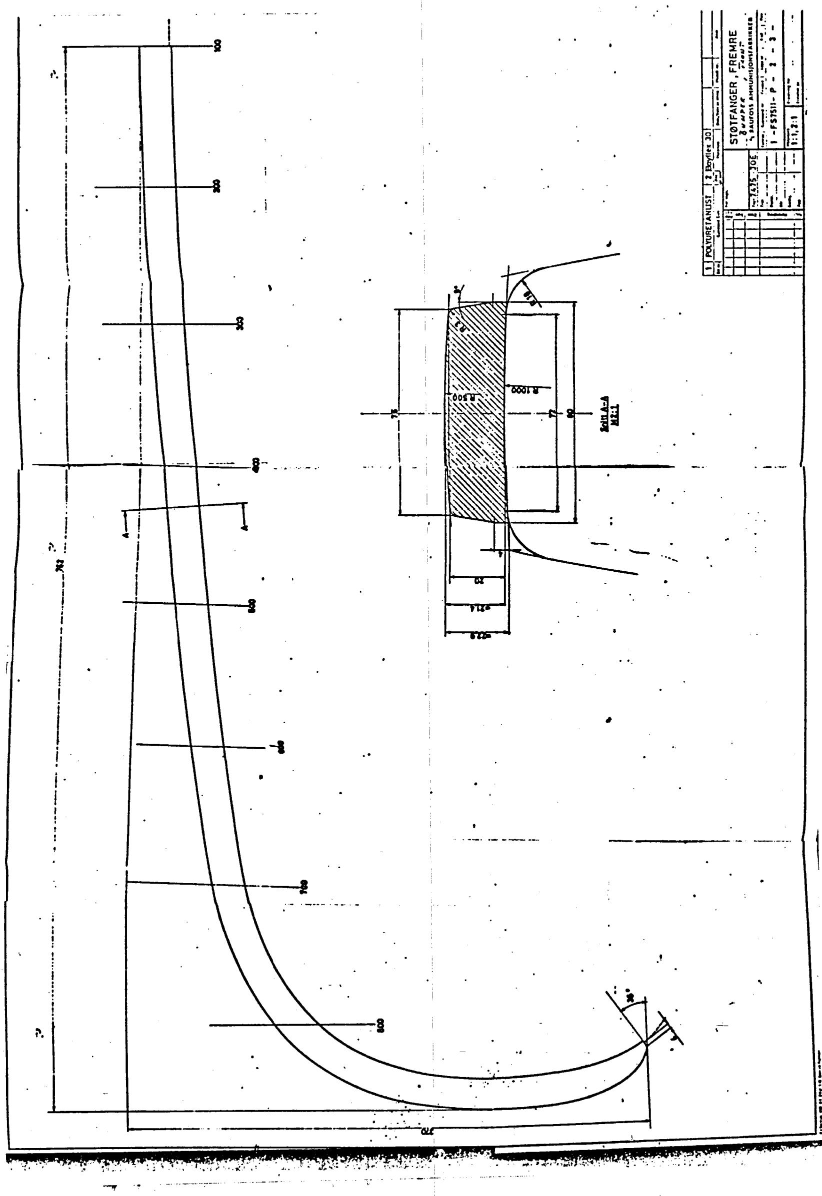
The Raufoss system, including bumper bar and shock absorbers, is made of high strength and corrosion resistant aluminum. It is capable of being adapted to all passenger cars.

The cost of the entire Raufoss bumper system is less than $60. This compares to a cost figure quoted by Houdaille Industries (a major domestic bumper manufacturer) of $163 for its high strength steel system that is capable of meeting the second phase of Part 581 at 5 mph. The cost of current model bumpers, according to agency information, is $287.

The Raufoss bumper system's weight depends upon the weight of the particular vehicle to which it is attached. For a 4,000 pound vehicle, the weight of the entire bumper system would be 65 pounds. The total weight of Houdaille's high strength steel 5 mph system would be 102 pounds. The weight of current model bumper systems, according to agency information, is 268 pounds.

A major difference between the Raufoss 5 mph system and its 10 mph system is that the 10 mph system allows for greater stroke. Due to the increased stroke, the system would require 4 to 8 inches more space in the longitudinal direction. This might result in an increase in car length. However, Raufoss makes the statement that it needn't.

The shock absorbers in the Raufoss system are equipped with a device that limits maximum energy absorber force to a predetermined level. In collisions at speeds greater than 10 mph the absorber will have full function and reduce the speed of the car to a lower level. Thus, the bumper system is capable of effectively reducing damage to cars at speeds above 10 mph.



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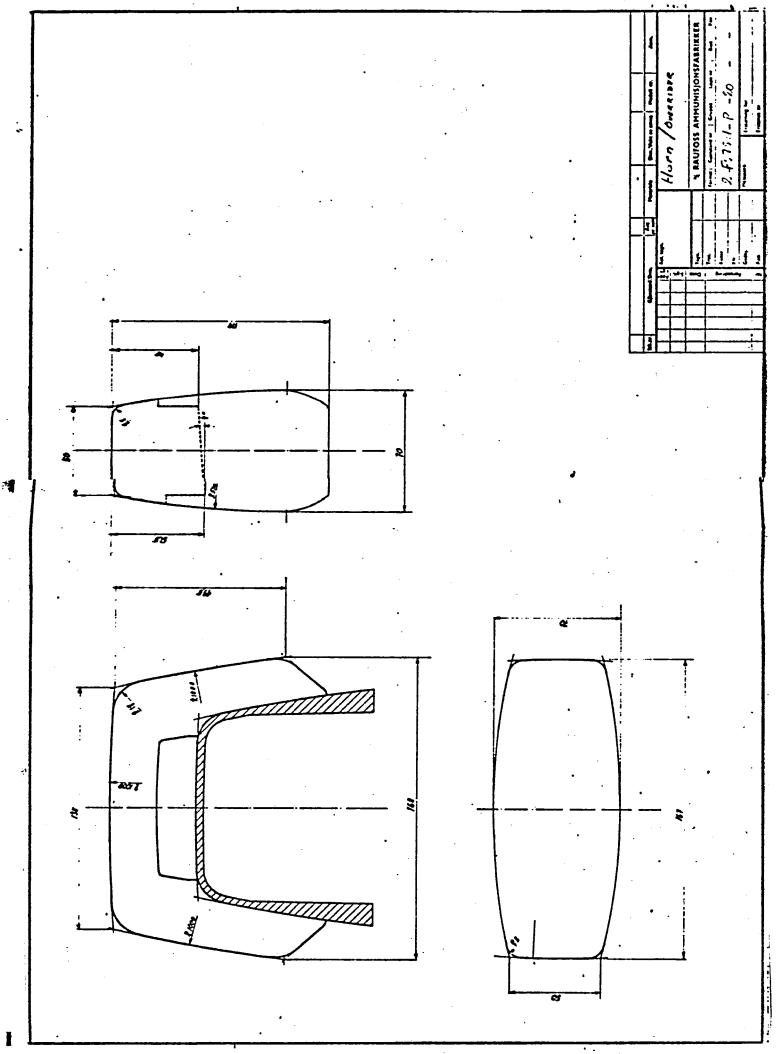

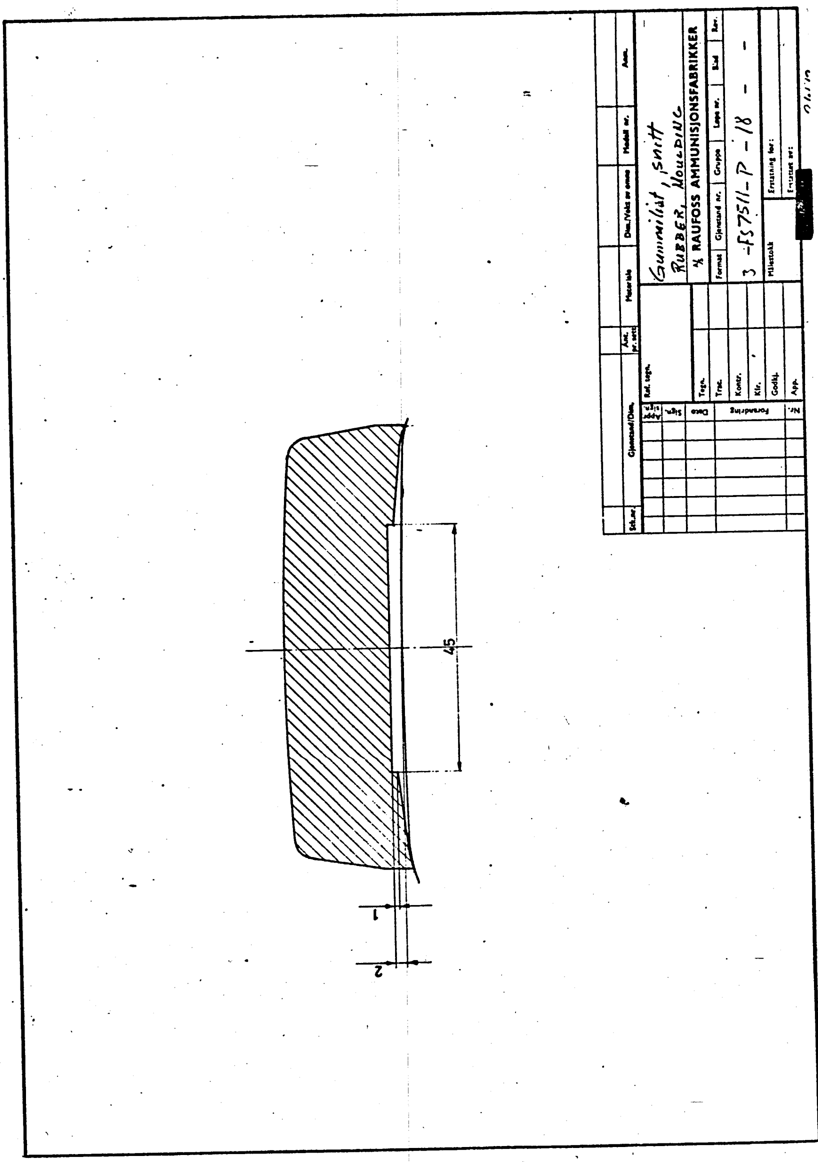
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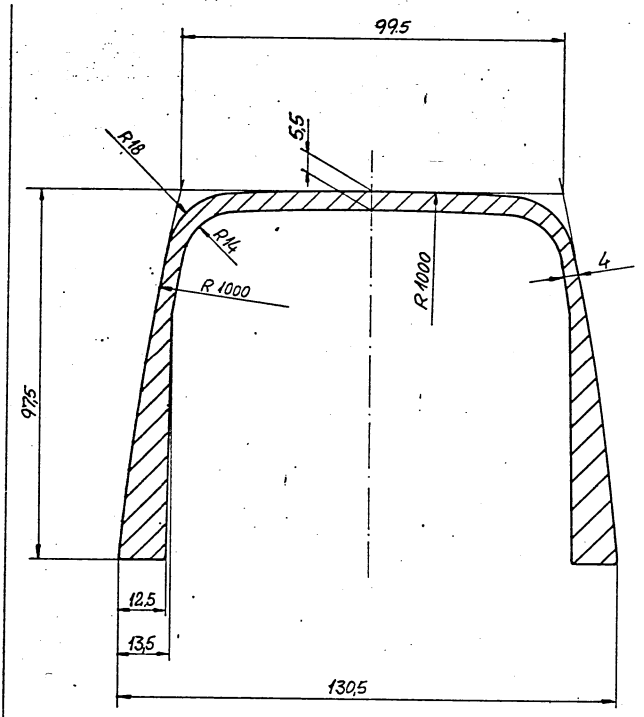

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		2054				

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Sign.			
Dato	Tegn. 17.3.75 TØ	A/S RAUFOSS AMMUNISJONSFABRIKKER	
Forandring	Trac.	Format / Gjenstand nr. / Gruppe / Løpe nr. / Blad / Rev.	
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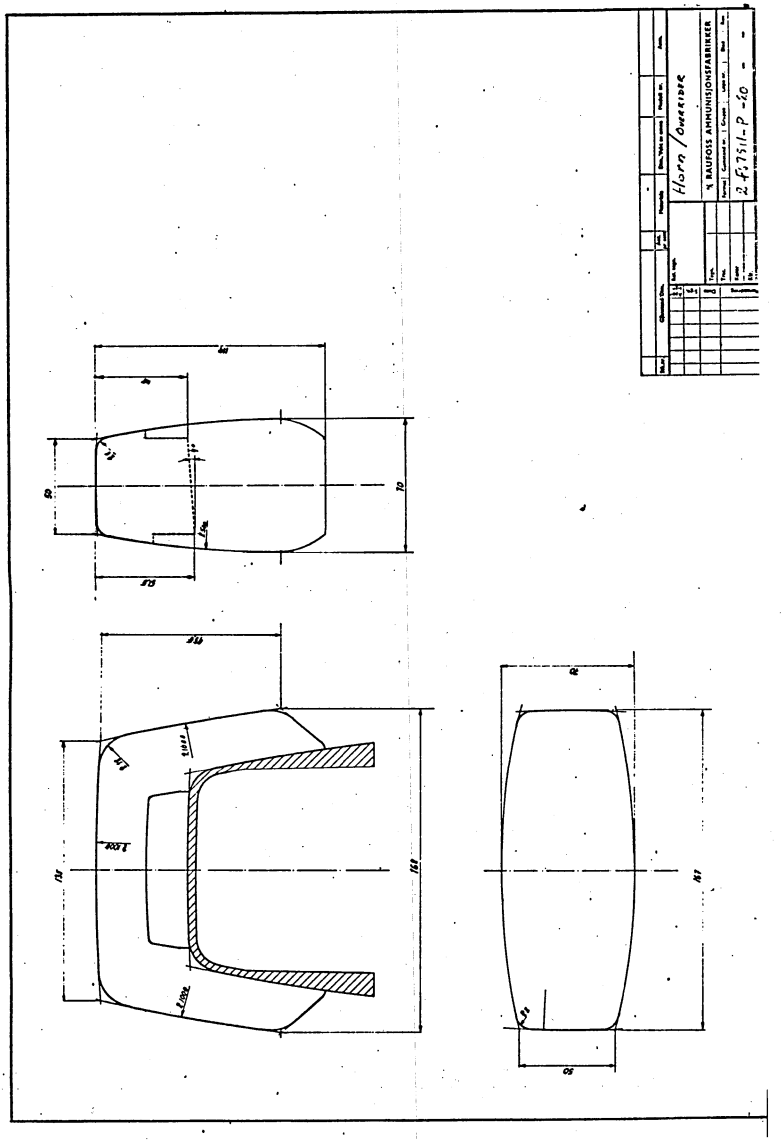
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A/S RAUFOSS AMMUNISJONSFABRIKKER
HEAD OFFICE 2831 RAUFOSS, NORWAY - TELEPHONE: 061-91 500 - TELEPRINTER: 11444 ra n - CABLE ADDRESS: FABRIKKENE, RAUFOS

US Department of Transportation
National Highway Traffic Safety Administration
Washington, DC 20590
USA.

Your ref.: Our ref.: TWT/GFu 2831 RAUFOSS, Norway: April 27th, 1977

Att.: Karen Dyson, Room 5219.

Subject: 10 mph No-damage Bumper System.

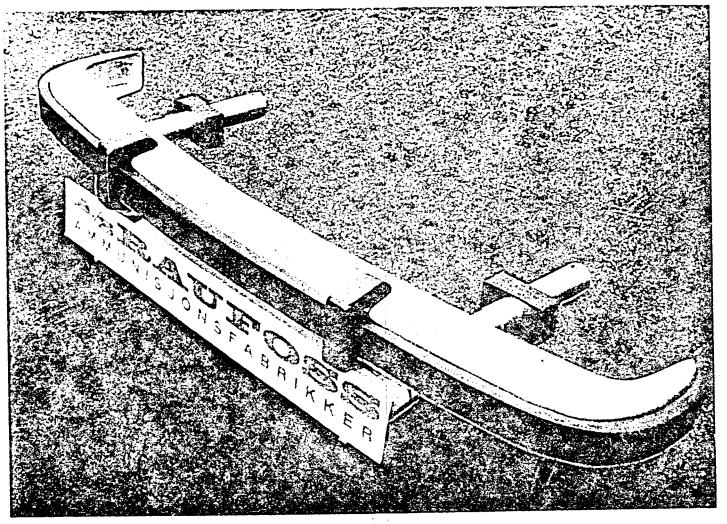
With reference to our meeting on March 7, 1977, I hereby enclose
./. drawings and description on our 10 mph bumper system.
Our indicative price for such a system is N.kr. 300,- per bumper, shock absorbers and rubber mouldings inclusive.
I look forward to your comments on our proposal.

Yours sincerely
per A/S RAUFOSS AMMUNISJONSFABRIKKER
Motor Vehicle Parts Division

T.W. Topp
Sales Manager.

./. Encls.

The 16km/h (10mph) no damage bumper system.



A/S RAUFOSS
AMMUNISJONSFABRIKKER

Head office : 2831 Raufoss, Norway
Telephone : (061) 91500
Cable address : Fabrikkene, Raufoss
Teleprinter : 11444 ra n

General background

Most damages to cars occur at low speeds and more than 60% are located to the front end.

Figure 1 shows how the accumulated damage costs increase rapidly with increasing speed in the lower speed region. The beneficial effects of a bumper protection system increase correspondingly very rapidly with increasing protection level.

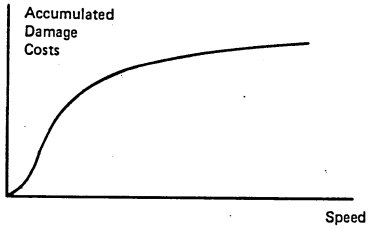


Figure 1.

The 10 mph bumper system developed by A/S Raufoss Ammunisjonsfabrikker has the following advantages:

1. Extremely low weight.
2. Very low cost increase compared to a 8 km/h bumper system.
3. Low forces exerted to the car.
4. Velocity sensitive hydraulic energy absorbers with built in maximum force limitation have full function at speeds higher than 16 km/h.
5. Made from guaranteed high strengh and corrosion resistant aluminium.
6. Can be adapted to all passenger cars.

System weight and space requirements:

The use of aluminium in both bumper bar and energy absorbers make the 16 km/h protection system extremely light.

The system gives "no damage"-protection at a weight less than present 8 km/h bumper systems in steel.

Due to longer energy absorber stroke the system requires 100 – 200 mm more space in the longitudinal direction of the car than common 8 km/h bumper systems, but the total length of the car must not necessarily be increased.

The relationship between bumper system weight and weight of car is shown in figure 2.

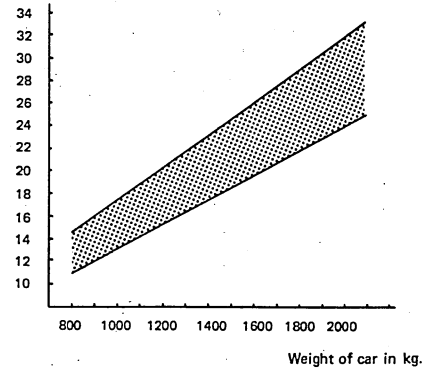
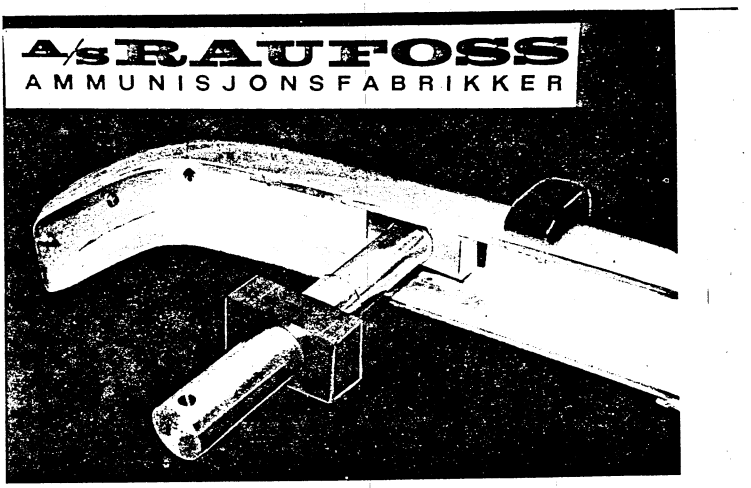


Figure 2.



Bumper bar:

The weight of the bar is mainly determined by the force that can be exerted onto the front structure of the car.

The bumper bar can be shaped with a large degree of freedom according to the wishes of the customer and is usually made with long rounded corners of styling and cost reasons and to give the car the best protection at corner collisions.

Hydraulic energy absorbers.

The kinetic energy of the car is taken up by high efficient hydraulic energy absorbers patented by A/S Raufoss Ammunisjonsfabrikker.

High efficiency and automatic reset without mechanical springs are obtained by the use of a compressible elastomeric media.

The weight of each absorber is only 2,0 kg for a car weighing 1500 kg.

The absorbers are equiped with a device that limits the maximum absorber force to a predetermined level. At collisions at higher speeds than 16 km/h the absorbers will have a full function and reduce the speed of the car to a lower level. The bumper system does therefore have a considerable beneficial effect in reducing damages to the car at speeds above the nominal design speed.

The energy absorbers are mounted with a pin at both ends and is given sideway support by a rubber cushion.

The relationship between weight of car, forces and absorber stroke at 16 km/h protection is shown in figure 3.

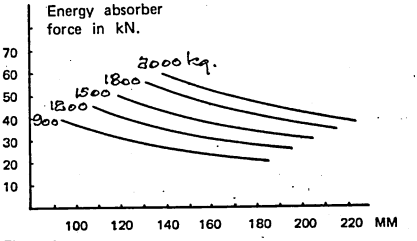


Figure 3

The energy absorbtion at different speeds is shown in figure 4.

Typical force - stroke curves at various speeds are shown in figure 5.

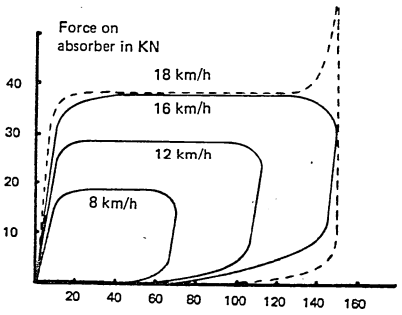


Figure 5

Typical force - stroke curves for a large car.

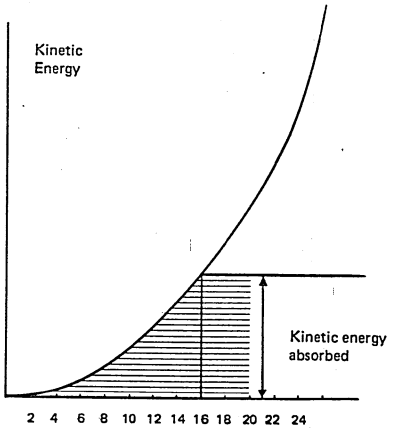


Figure 4

Materials and surface treatment.

The bumper bar and energy absorbers are made from guaranteed high strength and corrosion resistant aluminium with a minimum tensile strenght of $\sigma_{0,2}$ = 36 kp/mm^2 and $\sigma_{0,2}$ = 60 kp/mm^2 respectively.

All components can be delivered with the desired surface treatment, ground, polished, anodised bright or natural, or passivated as a basis for later painting.

AUTOMOBILE COMPONENTS AND SYSTEMS RELATING TO SAFETY AND EMISSIONS

Safety

Part 570, Vehicle In Use Inspection Standards (Title 49, Code of Federal Regulations) contains the Department's criteria for Periodic Motor Vehicle Inspection (PMVI).

These Standards address the brakes, steering system, suspension system, tires and wheels. These are the systems which vehicle safety research has repeatedly shown to be the most critical to reducing the number of accidents that occur. A listing of the Standards addressed in Part 570 is presented below:

- Brakes

  570.5(a) Brake failure indicator
  570.5(b) Brake system integrity
  570.5(c) Brake pedal reserve
  570.5(d) Service brake performance
  570.5(e) Brake hoses and assemblies
  570.5(f) Disc and drum condition
  570.5(g) Friction materials
  570.5(h) Structural and mechanical parts
  570.6 Brake power unit

- Steering Systems

  570.7(a) System play
  570.7(b) Linkage play
  570.7(c) Free turning
  570.7(d) Alignment
  570.7(e) Power steering system

- Suspension System

  570.8(a) Suspension condition
  570.8(b) Shock absorber condition

- Tires

  570.9(a) Tire tread depth
  570.9(b) Tire type
  570.9(c) General condition
  570.9(d) Damage

- Wheel Assemblies

  570.10(a) Wheel integrity
  570.10(b) Deformation
  570.10(c) Mounting

The Title III diagnostic (treatment group) inspections performed by each of the five demonstration projects included all of the Part 570 items. The nondiagnostic (control group) inspections performed at Chattanooga, Tenn., and Washington, D. C., did not include a wheel pull inspection of the brakes, and thus did not address Part 570(f), (g), and (h). Performance of a wheel pull inspection was not a local statutory requirement in those jurisdictions.

All of the projects also performed inspections of additional safety-related items not addressed by the Federal VIU standard. These varied somewhat among the projects, and included headlamp function and aim, other lamps and reflectors, seatbelts, body condition, glazing condition, exhaust system, fuel system, underhood and electrical items.

Emissions

In consultation with the EPA, the Department issued Part 590, Motor Vehicle Emission Inspections, of Chapter V, Title 49, Code of Federal Regulations. This regulation established the emission inspection criteria to be employed by the demonstration projects, for motor vehicles through the 1973 model year. The regulation established exhaust outlet emission concentration criteria for no-load conditions at engine idle and at 2250 rpm, and for loaded-mode inspection at idle and a two-phase driving cycle. Vehicle model years 1974 and newer are being inspected to new criteria developed by EPA and NHTSA.

The Department issued no standards concerning specific emission-related components and systems. The Guidelines for State Proposals suggested that the projects consider inspection of the PCV valve, air filter, idle speed, sparkplug firing voltage, available coil voltage, coil/condenser oscillations, ignition point operation and dwell, ignition timing and variation, vacuum advance condition, mechanical advance condition, dynamic cyclinder balance, and manifold vacuum condition. A typical diagnostic inspection procedure for emissions was also included.

None of the projects inspected all of the items suggested, and there was some variation among the projects. Most of the projects inspected the

PCV valve, idle speed, spark plug firing voltage, available coil voltage, ignition point dwell, ignition timing variation, and dynamic cylinder balance. Inspections of the battery and charging system were also frequently performed.

Those projects which conducted loaded-mode emission inspections used the results in a "truth chart" matrix to further identify carburetion or ignition problems as the probable source of the high emissions.

The information provided by the "truth chart" as to the probable cause assisted the repair community in providing adequate repairs at reasonable cost. During the first inspection cycle the rate of faulty emission repairs was about 25 percent for both the diagnostic and control groups. During the second cycle, however, the diagnostic group had a faulty emissions repair rate of only 11.5 percent, which was nearly 30 percent less than the 16.3 percent rate obtained by the control group. The diagnostic group's average emission repair cost of $23.80 was also slightly lower than that of the control group. Correcting the emission outages also improved fuel economy an average of 5 percent.

The three extended projects have not altered their basic emission inspection procedures, except for minor revisions of the engine analyzers to accommodate newer vehicles with high energy or other electronic ignition systems.

DISCUSSION OF CONTRACT STUDIES FOR TITLE II

(1) Development of rating methods.

General Electric
Final rpt. March 1976--$949,822

The GE study investigated two basic approaches to rating automobiles for crashworthiness, damage susceptibility, and ease of diagnosis and repair. Statistically valid differences were registered between various models based on their accident damage and injury histories, as found in insurance files, state accident records, and NHTSA files. The magnitudes of the differences measured by this "historical" approach were small, and the disadvantages of this approach are several. The contractor pointed out that ratings would not be available on a timely basis for the first purchaser, data on small volume models takes too long to accumulate, and driver characteristics affect the data. Statistically valid data on maintainability were limited to comparison of manufacturers' recommended maintenance schedules.

The other basic approach is "predictive", using mathematical modeling and carefully chosen crash tests to stimulate the accident environment to which it is expected the automobile will be exposed. The predictive approach can produce data on automobiles by the time they are introduced, including newly introduced models which have no accident history and small volume models which would take a long period to collect statistically valid accident data. However, the contractor noted that considerable refinement of math models and crash test measurement techniques is required, before reliance could be placed on this method. Predictive maintainability techniques were not developed.

The contractor recommended more development of the two methods.

(2) Experimental crash testing to support predictive ratings.

Calspan
Final rpt. Nov. 1976--$376,284

Dynamic Sciences
Final rpt. April 1976--$422,143

To support the predictive method of rating automobiles for crashworthiness and damageability characteristics, crash testing as undertaken by Calspan and Dynamic Sciences in separate contracts. Representative models of the same body size and configuration were employed in barrier and car-to-car crashes that were designed to simulate as many accident configurations as possible. Instrumented test dummies were used to assess crashworthiness characteristics, restrained by the seat belt system provided in the automobiles. One contractor developed some of the mathematical simulations of accidents that would be used in the predictive approach to complement the crash testing.

(3) Evaluation of Title II's effect on consumer's choice of automobile.

Booz, Allen, and Hamilton
Not yet final--$467,149

Booz, Allen, and Hamilton conducted research in automobile consumer decisions that would indicate how the choice of an automobile is affected by comparative information on crashworthiness, damageability, and maintainability, and how best to present title II data to consumers to affect their choice of automobiles. A literature search, a consumer buying factors survey, and in-depth group interviews were employed.

It was found that consumers have a high level of interest in title II information. Crashworthiness was most important, followed by maintenance costs. Damageability had little or no interest, presumably because consumers assume that their insurance will pay the costs of repair above the deductible, and that the choice of a more damage-resistant automobile would not lower their insurance premiums. Consumers also indicated that they would put much more reliance on government ratings than those of the manufacturer.

(4) Evaluation of Title II's effect on nation's economy.

A.D. Little
Final briefing
June 1975--$88,757

Center for the Environment and Man
Final rpt. June 1975--$109,171

Two separate approaches were taken to measure the anticipated socioeconomic impact of title II information on consumers, automobile manufacturers, the automotive repair and insurance industries, the national economy and society as a whole. Mathematical modeling of new car sales, accidents, and car operations was conducted by the Center for the Environment and Man. The accident model attempted to compare the number of occupants suffering fatal or serious injuries with and without title II information (and its effects on purchases). The other studies estimated the changed car-buying behavior, and its impact on total gasoline consumption cost, crash repair costs, insurance cost and routine maintenance and repair cost. The study concluded that title II information would have little effect on the choice of automobile. Only car manufacturers would be expected to act on the information by improving the crashworthiness of small cars.

The second approach was to conduct panel discussions by experts to assess, by group consensus method, expected sales impacts of various hypothetical title II results. Estimates were made of the effects on gasoline and raw materials usage, dealer profit margins, costs of repair and insurance, and the rate of serious injuries and fatalities. It was the judgement of the panels that consumers would be influenced more by crashworthiness information than data on damageability or ease of diagnosis and repair. The panels estimated market share shifts of 2.3 percent at the most in the 1976 model vehicles analysed, estimating market shifts both toward and away from given makes and models.

TITLE III
MOTOR VEHICLE DIAGNOSTIC INSPECTION DEMONSTRATION PROJECTS

The Diagnostic Inspection Demonstration Projects were mandated by Title III of the Motor Vehicle Information and Cost Savings Act. The Act required the Secretary of Transportation to make grants and provide technical assistance to the States in order to conduct not less than five nor more than ten demonstration projects. Each project conducted periodic motor vehicle safety inspections pursuant to criteria established by the Secretary by regulation. Emission inspections were also conducted pursuant to criteria established by the Secretary in consultation with the Administrator of the Environmental Protection Agency.

The Diagnostic Inspection Demonstration Projects were conducted in Alabama, Tennessee, Arizona, Puerto Rico, and Washington, D.C., and involved Federal and State agencies, universities and private industry, as well as 66,000 volunteer participants in the largest effort of its kind. For the period ending June 30, 1976, over 125,000 inspections had been conducted. In general, the program results dealing with costs and benefits are positive. There is much evidence to support the assertion that the concept of diagnostic inspection will benefit consumers by providing them information and data on the condition of vehicles, which if used properly, will result in greater safety, lower emissions, improved gas mileage, and generally lower overall repair and maintenance costs. Furthermore, the benefits for the consumer can be significantly greater by improving communication between the consumer, the inspection facility, and the repair industry. Since the consumer and the repair industry play key roles in the effective use of diagnostic information improvement in this critical communication link is essential.

Findings to the Questions asked by the Act

1. Costs & Benefits. Analysis of the failure rate data from the first, second and third periodic inspections show a statistically significant improvement in the condition of the vehicle safety and emission systems when compared with the first inspection as a baseline.

Emissions Benefits. Program results supported the assertion that specific diagnostic information on the condition of the engine helps both the motorist and the repair industry to properly and economically correct emission control system. Analysis show a 6-percent cost savings for tune-ups and carburetor work for the group with diagnostic information. Societal benefits in the form of cleaner air may be estimated in terms of reduced HC and CO emissions. For the 1968-1973 model year vehicles in the program, the improvements in CO emissions at idle ranged from 11-54%, and HC from 18-59%.

Fuel Economy. A 5-percent improvement in fuel economy after tune-up was determined from a representative sample of fuel consumption data provided under day-to-day driving conditions for all vehicles. A standard EPA fuel economy test conducted for NHTSA in Phoenix, Arizona, before and after minimum cost emission repairs showed up to 5.3% improvement in MPG.

Repair and Maintenance Cost. Potential cost-benefits of diagnostic information to the consumer were statistically significant for tune-ups and carburetor work. However, in other areas only a marginal savings may be attributed to diagnostic inspection. The true value of diagnostic inspection seems to be masked by dependence on the consumer and repair industry to effectively use diagnostic information, the possible reliance of the repair industry on the "flat-rate" manual, and the short duration of the program.

The net cost savings achieved as a result of diagnostic inspection should exceed at least slightly the diagnostic center operating cost. It was concluded that a typical inspection facility can inspect about 50 cars per day per lane for about $14 per car (1976 dollars).

The quality of the repairs are value received by the diagnostic group was greater than that of the control group.

2. Capability of Repair Industry to Correct Diagnosed Deficiencies and the Cost of Such Repairs. The basic approach was to compare re-inspection failure rates after repairs. The reinspection failure rate is a direct numerical measure of the industry's inability to perform an adequate repair. The average vehicle reinspection failure rates for the diagnostic treatment group are 20.7 percent for the first cycle inspection and 19.7 percent for the second periodic inspection. The control group, without diagnostic information, showed an average failure rate of 31.8 percent or 54 percent higher failure rate.

3. Vehicle-In-Use Standards and Feasible Reject Levels. The VIU standards placed emphasis on the five safety critical systems most frequently identified as causal or contributing factors to motor vehicle accidents. The five systems are brakes, suspension, steering, tires and wheels. The initial reject levels were particularly high, about 90 percent, in states without PMVI. There was a progressive improvement in the conditions of the safety and emission systems at subsequent inspections. Over 50 percent drop was achieved in the failure rates over the program duration of 14-16 months.

4. The Efficiency of Facility Designs Employed. Each of the five projects was encouraged to independently develop its facility(ies) and to select its equipment. Growing out of this independent effort, the projects evolved three basic diagnostic centers:

- Single - lift lane (D.C.)
- Duplex - lift lane (Alabama) and
- Lane - bay combination (Tennessee)

The most efficient design appears to be the duplex-lift lane. However, the flexibility and cost effectiveness of the lane-bay combination is particularly promising for states without PMVI where initial reject levels may be relatively high.

5. The Degree of Standardization of Diagnostic Systems and Test Equipment. One of the objectives of Title III was to gauge the level of standardization of methodology and equipment. Given the design and operational latitudes, the States did achieve a degree of standardization. All followed the guidelines prepared by NHTSA and conducted diagnostic inspections in accordance with Federally established VIU Inspection Standards and combined local criteria as required.

With the exception of the wheel alignment tester, which enjoys a virtual monopoly, the multitude of diagnostic instrumentation and analyzers available from commercial sources offered a high degree of standardization. The equipment is expensive ($73,000 per lane) and requires high volume utilization to permit profitable amortization.

6. Interchangeability and Interface Capability of Test Equipment and Vehicles. Relatively few cases of interchange/interface problems were reported by the projects. The wheel alignment equipment encountered difficulties with the width of several cars and failed to keep wheel in contact with the equipment rollers. On these occasions, either the vehicle design or the diagnostic equipment did not have the flexibility to cope with the vehicle size or unique features. Lifts were not compatible with all vehicles makes, some vehicle makes tended to roll out of test wells during brake inspection and some micrometers used for brake measurements hindered expeditious diagnosis.

7. Vehicle Designs which Facilitate or Hinder Inspection and Repair. Although there are a number of instances of poor vehicle designs that hinder inspection and repair, e.g., brake assemblies that require wheel removal to inspect and repair, the most common problem encountered was poor accessibility. This problem will become increasingly more serious as the vehicle size shrinks under pressure for greater fuel economy. The trend toward increasing complexity, with addition of accessories also tend to compound the problem.

Special Studies. In addition to the EPA fuel economy study previously cited, the Title III program funded studies on repair practices, safety condition of vehicles involved in accidents and a study on the attitudes and demographic make-up of motor vehicle owners and participants in the diagnostic inspection projects.

Based on the survey and on unsolicited testimonials, consumer reaction to the diagnostic inspection program has been positive. The concept of an independent, objective, diagnostic inspection, having no vested interest in the repair process, was well received by both the consumer and, interestingly, the repair industry as well -- 93 percent of program participants surveyed said they would rejoin the program if offered again, and 63 percent of representative national sample of vehicle owners responded that they would be willing to pay $10 or more for diagnostic service.

Present Project Staffing, Funding, and Activities.

	Alabama	District of Columbia	Tennessee
State Project Staff	30	19	26
Total Federal Funds	$2,993,475	$1,308,995	$2,978,182

Activities

The three projects are in full operation conducting diagnostic inspections under the extension provisions of PL 94-364. The associated data being collected consists of information on the condition of the safety and emissions subsystems of the vehicles. Trained counselors then give this information to the vehicle owners. If repairs are called for, the owners take their vehicles to the repair facilities of their choice, discuss the desired repairs with the repairman, have the repair facilities provide the repair services, and return the vehicles to the diagnostic inspection facilities for reinspections. The project determines the adequacy of the repairs and records the repair cost information.

The project extensions are designed to gain additional life-cycle data on the older vehicles and to get information on the inspection and repair of the newer vehicles that were not included in the earlier effort.

Mr. ECKHARDT. Next is Deputy Assistant Administrator for Mobile Source and Noise Enforcement, Dr. Shutler.

Doctor, you may proceed in the manner you see fit.

STATEMENT OF NORMAN D. SHUTLER, Ph. D., DEPUTY ASSISTANT ADMINISTRATOR FOR MOBILE SOURCE AND NOISE ENFORCEMENT, ENVIRONMENTAL PROTECTION AGENCY

Dr. SHUTLER. We appreciate the invitation to appear before you to discuss two subjects: (1) the history and results of consultation between EPA and NHTSA on the diagnostic inspection projects required by the Motor Vehicle Information and Cost Savings Act, and (2) an analysis and evaluation of the usefulness of diagnostic inspections as a means of ensuring compliance with emission standards.

The Secretary of Transportation wrote to the Administrator of EPA in August 1973 requesting EPA's assistance in providing data and information on which to base regulations for the inspections. Since then there has been considerable correspondence and informal communication between NHTSA and the staff of EPA's Office of Mobile Source Air Pollution Control in Ann Arbor, Michigan. At the request of NHTSA, EPA recommended the two types of emission inspection procedures which were used in the program. In our terminology these tests are short tests because they are much

shorter and simpler to administer than the Federal test procedure used by EPA to determine compliance by automobile manufacturers with new car emission and fuel economy standards. We recommended an idle test, which is the simplest and least expensive shorter test available, or alternatively, a loaded mode test which measures emissions while the car is in gear with its drive wheels turning on a dynamometer. Many believe that the loaded test offers some additional diagnostic capability over the idle test. These two tests are representative of the tests available for use and which are being used in various locations around the country today.

EPA also provided advice as to the pass-fail emission levels for these tests that could be expected to be exceeded by 20 percent to 30 percent of the vehicles in different age groups. In addition, in order to obtain fuel economy measurements on vehicles participating in the diagnostic inspections, EPA cooperated through an interagency agreement with NHTSA to provide for use of an EPA contractor who was already testing cars for EPA in Arizona using the more sophisticated Federal test procedure. It was from these measurements that estimates of the fuel economy and emissions impacts of the diagnostic and maintenance procedures were drawn.

With respect to the usefulness of diagnostic inspections in emissions control, their potential has been recognized for some time. The Clean Air Act Amendments of 1970 required that state implementation plans—plans developed by the States, or upon their failure to do so, by EPA to attain health related ambient air quality standards—contain provisions for inspection and maintenance (I/M) of automobiles where necessary. As a result there are some 25 urban areas in 18 States plus the District of Columbia which have I/M provisions in their plans. Further, more recent air quality data indicate that there are additional States which contain urban areas for which I/M will probably be required to meet the health related ambient air standards. However, as a result of State and public resistance, there are only four mandatory programs now in operation and another five programs in various stages of demonstration.

EPA is convinced of the need for I/M programs to help attain ambient air standards in polluted urban areas and to help the American public achieve the full benefits of the new car emission controls for which they are paying. Data obtained over the last several years consistently tell the same story. New motor vehicles are failing to meet standards when in actual use. For example, more than 60 percent of the 1975 vehicles tested exceeded one or more of the emission standards during the first year on the road. The cars are supposed to meet all standards for 5 years or 50,000 miles. The principal reason the vehicles fail to meet standards appears to be lack of proper maintenance or improper adjustment of the vehicles. Hence, we see I/M as a vital component of the national effort to achieve effective control of mobile source emissions.

In November of last year, EPA released a staff paper entitled, "The Need For and Benefits of Inspection/Maintenance of In-Use Motor Vehicles." A copy of that paper is attached to my statement [see p. 190]. The paper draws on laboratory studies of the potential benefits of I/M, on actual field data from ongoing I/M programs,

and on EPA surveillance data from in-use vehicles. The results of the DOT demonstration projects were not included in this paper because of timing, but the fuel economy and emissions results of those projects are consistent with and supportive of the results of the other studies on which the paper is based.

The paper contains four principal conclusions which are answers to questions that have impeded the progress of State implementation of I/M programs. One conclusion is that deterioration from cars on the road is greater than we had previously expected. State resistance to I/M programs has, in part, been based on EPA's own published assumptions that the emission reduction benefits of I/M would only be needed in most urban areas for a matter of 2 or 3 years before the emissions rductions realized as a result of the new car emission standards would enable achievement of ambient air standards. More recent information indicates that vehicles which do not undergo periodic effective maintenance will not come close to meeting the emission standards over their useful life as had previously been assumed.

The second conclusion is that I/M will be cost effective in reducing pollutants from in-use vehicles. As a result of our earlier overly optimnistic projections of the lasting benefits of the new car standards without effective maintenance and our failure to recognize the probable benefits of I/M in reducing the long-term emissions performance deterioration of in-use vbehicles, conclusions had been drawn that I/M was simply not a cost effective way of reducing emissions. More recent information has improved our estimates of I/M's cost effectiveness so that it now compares extremely favorably to further reductions in new car emission standards and to other stratagies for controlling mobile source related pollutants. We believe that an I/M program that has been in place for several years with effective mechanic training and fairly stringent pas-fail criteria can yield emission reduction benefits up to 40 percent to 50 percent for hydrocarbons and carbon monoxide.

The third conclusion is that the short tests which must be uised in I/M can readily identify high polluting vehnicles. Arguments in the past that short tests cannot correlate with the full Federal test and that the short tests would not be effective on catalyst-equipped cars have been disproved by the accumulation of more recent data, at least as far as vehicles of current design are concerned.

The fourth conclusion is that most of the vehicles can be repaired at a reasonable cost. Concerns over the cost impact on the public of having vehicles repaired to reasonable emission performance have of course engendered public resistance to I/M programs. However, results from ongoing I/M programs and the DOT projects indicate that average repair costs will run in the $15 to $30 range. In addition, EPA will soon propose regulations to implement the performance warranty under the Clean Air Act which will protect the owner of a properly maintained vehicle from emissions repair costs for a portion of the vehicle's life. And finally, the consistently demonstrated fuel economy benefits of I/M will offset a substantial portion of the costs.

Under the Clean Air Act, it is the responsibility of the States to implement I/M programs where they are necessary. However, we

believe the Federal Government can provide seed money to encourage the States to set up these programs.

At this point we are hopeful that, armed with the additional information we have acquired over the last several years demonstrating the need for, feasibility of, and benefits of I/M, and assisted by the use of Federal seed money, we will be able to persuade many more States to implement I/M programs in the near future.

Thank you, Mr. Chairman. I would be happy to respond to any questions you might have.

[Attachment to Dr. Shutler's prepared statement follows:]

THE NEED FOR AND BENEFITS OF INSPECTION AND MAINTENANCE OF IN USE MOTOR VEHICLES

SUMMARY

This review of available data indicates that the Federal motor vehicle control program is not reducing emissions from in-use cars as rapidly as expected. Improper adjustments and a lack of proper maintenance seem to be major reasons for the shortfall. The latest technology with catalytic converters seems as sensitive as older cars to proper maintenance and adjustment, although the results in California with catalysts and air pumps are more encouraging. The ability of short tests to identify high polluters is established and the service industry seems capable of repairing failed cars at reasonable cost. Costs of repairing catalyst cars are still somewhat of a question although initial indications are that required repairs will be similar to those on non-catalyst cars. Deterioration of vehicle emission levels following I/M is still subject to some dispute but a best estimate indicates that I/M will slow down the long term rate of emission control degradation. I/M is an effective and cost effective means of bringing cars into compliance with standards and early results from New Jersey's I/M program are encouraging.

Michael P. Walsh
Mobile Source Enforcement Division
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Inspection/Maintenance (I/M) programs are intended to identify cars which need remedial maintenance or adjustment and require repair on these cars. Also by providing a general incentive for owners to maintain their vehicles it is intended to bring about an overall improvement in fleet maintenance and reduced emissions. They are an integral part of the Federal motor vehicle control strategy. As illustrated in Figure 1, other key elements of this strategy include certification, assembly line testing and recall. Initially, prototype vehicles are certified by EPA. Certification confirms that the cars are designed so as to be capable of meeting standards. Assembly line testing of production cars is conducted to assure that vehicles, as manufactured, meet standards. In-use surveillance is carried out to assure that properly maintained vehicles continue to meet standards for five years or 50,000 miles; engine families found out of compliance are subject to recall. These are the three major elements of the Federal Motor Vehicle Control Program (FMVCP), and their execution is solely a Federal responsibility. However, compliance with standards is ultimately dependent upon the vehicles being maintained and adjusted correctly. Inspection/Maintenance is intended to address this final step to "close the circle". I/M is primarily a state responsibility with Federal support in the forms of technical assistance and Federally prescribed warranties against equipment and performance defects. I/M programs will provide incentives to vehicle owners to get the maintenance done, incentives to the service industry to do the maintenance properly and incentives to the manufacturer to make vehicles more serviceable. Through the recall and warranty elements of the Federal Motor Vehicle Control Program (FMVCP), there will be ample incentive to the manufacturer to design vehicles which if properly maintained can meet the standards.

I/M has a prominent role in many of the most important components of the Federal Motor Vehicle Control Program. To the extent that I/M identifies, relatively rapidly, vehicles which may be out of compliance it can feed this information back to the recall and assembly line test programs thereby allowing EPA to focus investigations and test orders on these vehicles. It is key to the warranty program by which individuals can identify equipment defects and it is a legal requisite for the warranty against performance defects which are detected by a Federally prescribed short inspection test. It is also the major ingredient in the federal anti-tampering program, as the threat of I/M failure is considered a strong deterrent to tampering. Without inspection/maintenance, all of these programs are significantly weakened.

The need for and benefits of inspection/maintenance has been the subject of intense controversy since the motor vehicle was identified as a major air pollution source in the United States. It began when it was established that emissions were related to vehicle adjustment,[1,2*] and was intensified when manufacturers opted for modified adjustments on vehicles as the major thrust of their initial emission control techniques.[3] As early as 1964, a study had been performed which showed initial emission reductions on the order of 30% for hydrocarbons and 15% for carbon monoxide were possible by means of a smog tune-up.[4] This initial reduction has subsequently been verified many times (see Figure 2) and even greater initial benefits have been demonstrated.[5,6]

Unfortunately, much of the debate over I/M has taken place without the benefit of sufficient data to resolve other questions such as deterioration of cars without I/M, adequacy of short tests to identify high polluting cars (especially if they are equipped with catalysts), the

* numbers refer to references at end of paper.

ability of the service industry to repair high polluting cars and their deterioration subsequent to repair. In the absence of data, the debate continued. Advocates of I/M argue that the benefits of emission control depend upon proper maintenance and that I/M programs are both effective and cost-effective means of assuring proper maintenance.[7] Moreover, they continue without programs of this type, much of the potential benefit of the Federal Motor Vehicle Control Program will be lost.[8]

On the other hand, opponents of inspection/maintenance have argued that the FMVCP can solve the emissions problem without I/M as newer technologies much less sensitive to maintenance are placed on cars.[9] In the recent past, many people were pointing to the catalytic converter as such a maintenance insensitive technology.[10] Opponents have also argued that there is no good short test which correlates with the full Federal Test Procedure (FTP), and that therefore the benefits and cost-effectiveness of I/M will be quite poor.[10,11] In addition, it has been argued that consumers, the owners of motor vehicles, will be thrown into the hands of an inadequate service industry and that I/M is just a means of passing the buck from the automobile manufacturers to individual consumers, thus shifting the burden for cleaning up the motor vehicle air pollution problem from those responsible for it.[12]

The purpose of this paper is to review the available data to see what this data reveals about the technical concerns which go to the heart of the need for and benefits of inspection/maintenance. Particular focus will be on deterioration of in-use vehicles with and without inspection/maintenance, the ability of short tests to identify cars which need remedial maintenance, the ability of the service industry to repair high polluting cars and the costs and cost-effectiveness of I/M.

THE NEED FOR I/M

To the extent that cars in use meet standards throughout their useful lives without the existence of I/M programs there is no need for I/M programs. Conversely, to the extent that vehicles fail to meet standards there is a need for additional strategies to lower emission levels. I/M, of course, is one such option.

Figure 3 compares CO and HC exhaust emission levels based on data collected during 1975 as part of the FY 74 emission factor program[13,14,15] with those most recently published by EPA.[16] For carbon monoxide, the measured results are consistently higher than the estimates while for HC the differences are insignificant except for 1975 cars. Based on these new data, as well as data collected from previous emission factor programs, new estimates of emission deterioration have been projected[17,18] and these are contrasted with the earlier estimates in Figures 4 and 5. These figures show emission estimates normalized according to their respective standards and

indicate that previous estimates of 1975 model year emissions were optimistic, especially for carbon monoxide. In summary, the previous predictions that average emissions would initially meet standards and continue to do so for six or seven years for carbon monoxide, and two or three years for hydrocarbons have been found overly optimistic. Estimates based on the data now indicate that carbon monoxide emissions are initially higher than had been estimated, exceeding standards on the average in the first year, and are projected to deteriorate rapidly in subsequent years. For hydrocarbons, initial emissions are slightly higher than estimated and are projected to exceed the standard on average after about one year. The relationship of emissions for pre-1975 model year cars to their appropriate standards as a function of time is similar to the relationship for 1975 models.

The first question that comes to mind is why do vehicles in use emit at such high levels? The studies summarized in Figures 6 and 7 indicate that the major reason is a lack of proper maintenance and/or proper adjustment on in-use vehicles. More specifically, for 1973 model year vehicles with approximately 15,000 accumulated miles, two different studies were carried out. One focused on vehicles maintained according to manufacturers' instructions and which were carefully tuned-up prior to testing. The other focused on vehicles tested without special preparation, i.e., vehicles in their normal state of maintenance.[20] As the figures illustrate, carbon monoxide and hydrocarbon levels for the normally maintained cars are substantially greater

than for those maintained and tuned according to manufacturers' specifications. For 1975 vehicles, parallel studies have not been done, except for normally maintained cars at an average of about 8000 miles.[21] The normally maintained cars were subdivided according to idle adjustment into "properly adjusted" and "improperly adjusted" subclasses.[22] These data indicate that the sensitivity to idle adjustment may be even greater for 1975 models than it had been in earlier model years, and again the impact is most significant for carbon monoxide.

Recent data have also been collected on 1975 cars in California[23,24] and these data, summarized in Figure 8, show that California cars are considerably cleaner than 49 state cars, relative to their respective standards, although at least some of the data indicates that they are dirtier than expected. The reason for the relative cleanliness of the California vehicles is somewhat speculative.[25] The California assembly line test program may be responsible; the mild climate may lead to less tampering than in other areas; the state's certified repair facilities may result in better vehicle maintenance; the technology which places much greater emphasis on air pumps may be more forgiving of maladjustments or less likely to receive them because of better driveability; the Title 13 Program which requires dealers to properly set cars following maintenance may keep emission levels low; the tradition which has been established over many years in California of controlling emissions from cars, though difficult to quantify, may have the greatest impact of all.

Analysis by the California Air Resources Board however, indicates that considerable tampering is going on, perhaps affecting as many as 15 - 20% of 1975 MY cars.[24] Carefully screened 49 state cars have shown as much as 20 -25% tampering on 1975 cars after only one year.[26] Since EPA studies have

shown that tampering increases with vehicle age,[27,28] this raises questions about the long term effectiveness of the California and 49 state vehicle emission controls. A particular question for all of these vehicles is, what will happen to the emission controls after 50,000 miles? The Federal tools of recall and warranties are applicable only for 5 years or 50,000 miles, whichever is less. I/M is the only compliance technique which provides for the periodic evaluation of whether vehicles in use continue to control emissions throughout their life.

Although many questions remain, two firm conlusions can be drawn. First, with the possible exception of California, it is clear the Federal Motor Vehicle Control Program (FMVCP) is not fully achieving its goal of bringing cars in actual use into compliance with standards. Second, the lack of proper vehicle maintenance and, particularly for 1975 models, improper vehicle adjustment seem to be primary reasons for the shortfall. Recognizing the problem, attention must be focused on the questions of whether I/M can identify the high polluting vehicles, whether such vehicles can be repaired, the costs of such repairs and, in general, the overall emission reduction.

ABILITY OF SHORT TEST TO IDENTIFY HIGH POLLUTERS

How well can I/M do its job? The first question in this regard is how well can an I/M short test identify high polluting vehicles? The full Federal Test Procedure (FTP) of course, is the best true measure of a vehicle's pollution characteristics but this is too expensive and time consuming to be considered for a large scale I/M program. Several short tests (idle, key mode, Federal three mode among others) which are better suited to I/M have been investigated in terms of their ability to predict FTP emission levels in a consistent reliable manner but the results have

not been too encouraging.[53] However the results have been very encouraging in terms of being able to predict whether a car would pass or fail the standard on the FTP. In effect, though the short tests have not demonstrated the ability to predict the absolute FTP result with any high degree of confidence, they have shown that they can discriminate with high confidence between clean and dirty cars. For example, based on data collected in the FY 74 emission factor program, a recent EPA study[29] selected cutpoints for the idle test which give approximately the same rate of errors of commission (cars failing the short test but which would pass the full federal test procedure) as the federal test procedure itself would give i.e., 5% of the total population.[30,31,32] Vehicles were then screened according to these cutpoints with results as shown in Figure 9. These data suggest that the idle test is capable of segregating low polluting cars from high polluting cars.