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The Congress has a recommendation from the Department of Transportation that it no longer require periodic motor vehicle safety inspections in accordance with Federal standards as part of each State's approved highway safety program. The question of whether the Congress should make safety inspections mandatory or optional in State highway programs has grown out of a decade of controversy between the National Highway Traffic Safety Administration and many States. Findings/Conclusions: Only three States reported full compliance with the Federal inspection quality standards as of July 1977. The Safety Administration's threatened use of sanctions against State highway programs not implementing the standards led to confrontations and eventually created an atmosphere which led the Congress to temporarily lift the authority to impose funding sanctions until the Department of Transportation studied the adequacy and appropriateness of highway safety program standards. Recommendations: Because vehicle defects can and do cause highway accidents, possibly as many as 15% to 25%, and because some types of defects, such as massive failure of brakes, could lead to serious accidents, the Congress should: reject the Department of Transportation's recommendation which would make compliance with the Federal vehicle safety inspection standards optional; require the Department to modify the Federal inspection standards to allow States flexibility in determining the specific type of inspection program best suited to their highway needs; and direct the Department to undertake priority research into the effectiveness of periodic inspection standards for detecting and correcting vehicle defects before they lead to accidents and coordinate this research with States to help

insure acceptability of its results. (Author/SC)

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REPORT TO THE CONGRESS

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

Effectiveness Of Vehicle Safety Inspections Neither Proven Nor Unproven

Vehicle defects cause highway accidents. Would an annual safety inspection of all registered vehicles in the Nation reduce the number and severity of these accidents to such an extent that its cost and inconvenience is acceptable to vehicle owners? The Department of Transportation doesn't know, but it needed to know to get States to comply with the Federal inspection standards.

Because the threat of sanctions proved ineffective in achieving States' compliance, GAO recommends that the Congress

- direct the Department to modify inspection standards to allow States flexibility in implementing programs best suited to their highway safety needs and
- require the Department to undertake priority research into the effectiveness of periodic inspection requirements for detecting and correcting vehicle defects before they lead to accidents.



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-164497(3)

To the President of the Senate and the
Speaker of the House of Representatives

This report discusses the Department of Transportation's program for the periodic safety inspections of motor vehicles. Since 1966, when the program was initiated, the Department has achieved only limited success in getting additional States to adopt the program requirements. It also identifies problems the Department has encountered with the program and the reasons for States' unwillingness to adopt periodic inspections as part of their highway safety programs.

We are making recommendations to the Congress for improving the effectiveness of the management and administration of the Department's safety inspection program.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Acting Director, Office of Management and Budget; the Secretary of Transportation; interested congressional committees; Members of Congress; and other interested parties.

A handwritten signature in black ink, reading "Luther B. Stastek".

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

EFFECTIVENESS OF VEHICLE
SAFETY INSPECTIONS NEITHER
PROVEN NOR UNPROVEN

D I G E S T

The Congress has a recommendation from the Department of Transportation that it no longer require periodic motor vehicle safety inspections in accordance with Federal standards as part of each State's approved highway safety program.

Because vehicle defects can and do cause highway accidents, possibly as many as 15 to 25 percent, and because some types of defects, such as massive failure of brakes, could lead to serious accidents, GAO recommends that the Congress

--reject the Department's recommendation which would make compliance with the Federal vehicle safety inspection standards optional

--require the Department to modify the Federal inspection standards to allow States flexibility in determining the specific type of inspection program best suited to their highway needs (see p. 12) and

--direct the Department to undertake priority research into the effectiveness of periodic inspection standards for detecting and correcting vehicle defects before they lead to accidents and coordinate this research with States to help ensure acceptability of its results.

The question of whether the Congress should make safety inspections mandatory or optional in State highway safety programs has grown out of a decade of controversy between the National Highway Traffic Safety Administration and many States. The Safety Administration made little progress in convincing States of the merits of its vehicle inspection standards and an impasse developed soon after the standards were issued.

The States required an answer to the question: Would an annual inspection of all vehicles reduce the number or severity of highway accidents to an extent that its cost and inconvenience is acceptable to the owners? The Safety Administration neither had an answer then nor does it have one now.

What its research has shown, though, is that vehicle defects can and do contribute to the national death and injury toll from highway accidents and to major economic losses.

Federal inspection standards consist of two parts. One deals primarily with the scope and frequency of inspections, the other with the quality.

In June 1967, the Safety Administration issued a standard providing that each State participating in the highway safety program must inspect all registered vehicles in that State at least annually. In September 1973, the Safety Administration issued standards which specified safety inspection procedures and the criteria for determining whether inspected cars passed or failed the inspection. State resistance has been strong against both.

After the Federal inspection standard was issued, 10 States adopted the program joining 21 States and the District of Columbia that already required annual inspections. The Safety Administration has not been successful in convincing the remaining States of its value.

The Safety Administration's record of achieving State compliance with the inspection quality standards has been even less successful, with only three States reported in full compliance at July 1977. Cost of inspections is a major issue in the resistance. The strict inspection procedures and pass/fail criteria meant vehicle owners would expect to pay substantially higher inspection fees. In addition, there was a high probability that vehicle owners would be paying for more repairs because of the defects found in the inspection.

State legislators appear unwilling to take the risk of adverse public reaction to the size of the fees and, possibly, greater repair costs without convincing evidence that they were offset by increased safety.

The Safety Administration decided that its best approach lay in demonstrating standards' effectiveness in preventing accidents or in decreasing their severity. It did not, however, follow through on its intentions to perform this research and provide the necessary demonstrations.

The Safety Administration delayed issuance of the inspection criteria for about 5 years after the date specified by the Congress because it lacked what it considered adequate information on which to base the standards. Most of the research performed thereafter, however, dealt with the causes of accidents. It did not gather sufficient evidence to show that vehicle safety inspections are effective in identifying and correcting vehicle defects which lead to accidents.

Unable to convince States that they should adopt the vehicle safety inspection standards, the Safety Administration decided to force State implementation by threatening to exercise its sanction authority. Department officials indicate that this was in part responsive to a 1973 Federal court order which mandated the Secretary to issue the inspection quality standards.

The Congress had authorized the Safety Administration to withhold safety funds and some construction funds from State highway programs if States were not implementing the standards.

The Safety Administration's threatened use of sanctions led to confrontations and, eventually, created an atmosphere which led the Congress to temporarily lift the authority to impose funding sanctions until the Department of Transportation studied the adequacy and appropriateness of highway safety program standards.

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ABBREVIATIONS

DOT	Department of Transportation
GAO	General Accounting Office
NASS	National Accident Sampling System
NHTSA	National Highway Traffic Safety Administration
PMVI	periodic motor vehicle inspection

CHAPTER 1

INTRODUCTION

Motor vehicle accidents are primarily caused, singularly or in combination, by: driver error or misjudgment, roadway conditions, or vehicle condition. In passing the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1301 et seq.) and the Highway Safety Act of 1966 (23 U.S.C. 401 et seq.), the Congress launched a broad-scale effort to reduce the number and seriousness of highway accidents from each of these causes by requiring the Department of Transportation (DOT) to develop uniform safety standards and oversee their implementation by States. A list of the highway safety program standards DOT developed is included as appendix I.

This report deals with one of the areas of concern--the mechanical safety of vehicles in use on the Nation's highways. Despite the safety reliability that can be built into new cars, the parts and mechanical systems deteriorate with use and time, and this can cause accidents. Studies have shown that perhaps 1 out of every 10 accidents is caused solely by the failure of vehicle equipment, such as brakes, tires, and steering mechanisms, and that these failures are more often a contributing factor in the cause and severity of accidents.

Since 1929 some States have felt the need for a safety program which required owners to periodically (usually, once a year) submit their vehicles to a State-authorized inspector for a safety inspection and to correct the defective conditions found. The programs were aimed at detecting and correcting potentially serious defects before they lead to accidents. Such programs are based on the premise that vehicle owners cannot detect or choose not to voluntarily correct unsafe vehicle conditions.

The National Highway Traffic Safety Administration (NHTSA) adopted the periodic motor vehicle inspection (PMVI) concept for implementing a requirement in the Highway Safety Act of 1966 that vehicle inspection be a part of each State's highway safety program. States are provided with Federal funds to assist in implementing such programs. The standard NHTSA issued in June 1967 (see app. II) stated that each State, as a minimum, would have a program to inspect every registered vehicle in the State at the time of initial registration and at least annually thereafter.

To receive full funding under the law, the States had until December 31, 1969, to implement or to show reasonable progress toward implementing a highway safety program meeting the various Federal standards, including vehicle inspection. However, the law permitted a temporary waiver of any standards, NHTSA limited to 3 years, to allow States to evaluate a substitute they proposed to accomplish the same objective by a different means. After that period a State could apply for a permanent waiver, or amendment, to a standard subject to NHTSA's approval. If a State was not implementing the standards, or did not have an approved substitute or experimental program, it faced the loss of its apportionment of Federal highway safety funds and 10 percent of its apportionment of Federal highway construction funds under the sanction provisions of the act. However, this sanction authority was later temporarily withdrawn by the Highway Safety Act of 1976 (23 U.S.C. 402).

The PMVI standard dealt principally with the scope and frequency of vehicle safety inspections, i.e., all registered vehicles in a State at least once a year. NHTSA was also required to deal with the quality of inspection by the National Traffic and Motor Vehicle Safety Act of 1966. Standards issued pursuant to that act specified procedures State inspectors were to use in detecting vehicle defects and the criteria for passing or rejecting inspected cars. The procedures and criteria were collectively known as vehicle-in-use standards, derived from the objective of the 1966 act which was to improve the safety of vehicles in use on the Nation's highways.

Although the act required NHTSA to issue the vehicle-in-use standards by September 1968, the Agency delayed issuance until September 1973 for vehicles weighing 10,000 pounds or less, and until August 1974 for those exceeding that weight. Department officials indicate that their issuance then was in response to a U.S. District Court order. The delay was due to what NHTSA considered a lack of adequate information on which to base the standards.

SCOPE OF REVIEW

We reviewed various reports and studies relating to the development and implementation of the safety inspection standards and discussed various features with officials at NHTSA Headquarters and NHTSA Region IV, Atlanta, Georgia. We visited Alabama, Connecticut, Florida, Georgia, Tennessee, and Wyoming and interviewed the Governor's Highway Safety Representative in each of these States, including the national chairman of the State Representatives. In addition, we interviewed State highway safety officials, State legislators, and their staffs concerned with automobile safety.

We observed the operation of safety inspection stations, both State-owned and State-appointed, in several States and accompanied enforcement personnel conducting random roadside inspections.

CHAPTER 2

STATE RESISTANCE TO FEDERAL STANDARDS FOR MOTOR VEHICLE SAFETY INSPECTION

State officials generally accepted evidence that vehicle defects can and do cause highway accidents. However, NHTSA was not successful in convincing many of them of the PMVI merits in preventing accidents. After NHTSA issued the standard, 10 States adopted the program by January 1969, joining 21 others and the District of Columbia that already had PMVI programs. The Agency then reached an impasse with the remaining States that resisted adoption of the program. Resistance was even greater to the vehicle-in-use standards, even by those States complying with the PMVI standard. According to Department officials only three States fully met the standards at July 1977. Appendix III shows the status of compliance by individual States. State officials do not believe vehicle owners would accept the cost and inconvenience of inspections under the Federal standards with the existing knowledge of their safety value.

COMPLIANCE WITH PMVI STANDARD

The concept of motor vehicle inspection was rather widely accepted among the States before NHTSA issued its PMVI standard, with 21 States and the District of Columbia already administering such a program as of December 1966. Ten additional States eventually adopted programs by January 1969, but 3 States--Wyoming, Idaho, and New Mexico--have since discontinued programs. Other States temporarily complied with the standard by adopting an experimental inspection program, but at June 1977 most of these had been completed.

NHTSA issued the PMVI standard in June 1967. Major events affecting the standard's implementation and the number of States reportedly in compliance--including the District of Columbia--at about the time they occurred are shown below:

	Number of States		
	<u>Meeting PMVI standard</u>	<u>Experi- mental program</u>	<u>In compliance</u>
January 1969-- compliance re- quired by law	32	0	32
September 1973-- vehicle-in-use stan- dards issued	32	2	34
May 1976--NHTSA's sanction author- ity lifted	32	11	43
June 1977--DOT standards evalua- tion report issued to the Congress (note a)	29	2	31

a/The figures for this category were developed through discussions with an agency official.

Adoption of a typical State-wide PMVI program or an experimental program required less of a resource commitment from a State or from its citizens than did adoption of vehicle-in-use standards. Even though PMVI programs required inspection of all registered vehicles, the inspection concentrated on the more accessible vehicle parts and mechanical systems, and some States kept fees charged to vehicle owners as low as a dollar. Experimental programs, which usually consisted of roadside inspection of randomly selected vehicles by law enforcement personnel, were even less costly to the vehicle owners. States used Federal highway safety funds to implement experimental programs, thereby minimizing the negative public reaction to inspection fees that generally accompanied adoption of PMVI.

Even among the States which fully met the standard, there was evidence of a lack of commitment. Wyoming, for example, adopted a PMVI program in 1967 but repealed the authorizing legislation in 1977 by a vote of 61 to 1 in the State House and 23 to zero in the State Senate after NHTSA's sanction authority was lifted. Wyoming safety officials told us that there was no general public support for the PMVI program and the State neglected its administration. They said the quality of inspections was poor due to the lack of adequate monitoring and enforcement, and the general public perceived safety inspections as a nuisance and ineffective in reducing the number of accidents in the State.

In the State of Washington, the experimental inspection program consisted of mailing a notification to the owners of randomly selected vehicles. The owner was required to inspect the vehicle, correct any defects, and return a certificate that the vehicle was safe for operation on the highways. Spot audits were made by the State to assure compliance.

COMPLIANCE WITH VEHICLE-IN-USE STANDARDS

NHTSA had anticipated strong resistance from States to vehicle-in-use standards, even from those States which had PMVI programs, because the standards meant an increase in inspection fees that had to be charged to cover more strict inspection procedures. For example, their accident data had clearly shown that a vehicle's braking system was a critical element in an inspection and that an effective inspection, which required the removal of a wheel to inspect the brake and wheel assemblies, provided the greatest potential safety payoff of any inspection procedure. PMVI programs of most States, however, did not require wheel removal. Introduction of this procedure, along with other more strict inspection procedures, threatened to increase State inspection fees substantially.

Because of the potential for controversy, NHTSA worked cautiously to develop and implement the standards.

Development of vehicle-in-use standards

The complexity of developing standards became apparent to NHTSA in evaluating existing State procedures as required by the National Traffic and Motor Vehicle Safety Act of 1966. The Secretary of Transportation concluded in his 1968 report to the Congress providing the results of his evaluation that additional research was needed to establish appropriate criteria for judging whether a vehicle could safely operate on the highways and for specifying the procedures to be followed in identifying vehicle defects.

It was not until August 1971 that NHTSA organized a strategy for acquiring the information needed. It began with the appointment of a task force which studied the feasibility of issuing vehicle-in-use standards. The task force, completing its work in November 1971, recommended that NHTSA address only critical vehicle components in the standards and those where safety payoff could be demonstrated. It also recommended not issuing inspection techniques and procedures until they had been thoroughly validated. From the work of the task force NHTSA developed a program plan in April 1972 which had the following goals

--to establish safety performance criteria for motor vehicle operations and recommended inspection procedures by June 1973, with emphasis on brakes, steering, suspension, and tires; and

--to develop a prototype inspection program by June 1973 as a means of encouraging States to use the recommended criteria and procedures and for proving that motor vehicle inspection systems can reduce accidents and a proportional number of injuries and fatalities with a favorable cost-benefit ratio.

The prototype inspection program, which NHTSA never implemented (see p. 14), was designed to validate the inspection criteria and procedures over a period of several years.

NHTSA had not planned to issue regulations which required States to adopt the uniform vehicle-in-use criteria and inspection procedures until after they were validated. In 1972 Safety Administration officials stated that they had not placed high priority on their inspection program because no evidence had been developed to show that State inspection programs have brought about a reduction in accidents.

Pressures to issue the regulations, however, were brought upon NHTSA by the Congress and the courts. In July 1972 the Senate Commerce Committee urged NHTSA to comply with the congressional mandate and establish the vehicle-in-use standards. A July 1973 district court order that concerned the nonissuance of the standards prompted NHTSA to issue vehicle-in-use standards in September 1973 for vehicles weighing 10,000 pounds or less, and in August 1974 for vehicles weighing over 10,000 pounds.

Implementation of vehicle-in-use standards

Upon issuing the standards, NHTSA allowed States about 5 years, to June 30, 1978, to comply fully with the standards. In the interim, NHTSA required States to show some progress by June 30, 1976, toward their implementation or risk fiscal sanctions. Satisfactory progress could be shown by the adoption of experimental inspection programs (for example, inspection of randomly selected vehicles), or an experimental wheel-pull program as part of a PMVI program.

In mid-1974, NHTSA ranked implementation of PMVI and vehicle-in-use standards as priority 3 among the 18 highway standards, behind only blood alcohol content requirements (Standard No. 8, Alcohol in Relation to Highway Safety) and motorcycle helmet use requirements (Standard No. 3, Motorcycle Safety). At about the same time, DOT published rules for initiating sanction proceedings. To achieve uniform compliance with the blood alcohol requirements of highway safety standard 8, NHTSA actually began sanction proceedings against two jurisdictions in 1974. By 1975, these jurisdictions reportedly changed their statutes to conform with the Federal requirements, and NHTSA, therefore, dismissed the sanction proceedings.

Rather than implement the PMVI and vehicle-in-use standards and to run the risk of sanctions, 13 States by 1975 had chosen to adopt experimental vehicle safety inspection programs, as permitted by legislation. NHTSA's criteria for approval of an experimental program as a principal justification for waiving the PMVI standard included the following requirements.

- Demonstrate a positive safety effect on the entire experimental sample of vehicles.
- Provide reasonable assurance that if implemented statewide, it could provide adequate coverage to the State's total vehicle population.
- Exhibit results equal to or superior in safety quality, to those which could be achieved under a PMVI program.

Prior to 1975 four States--Michigan, California, Connecticut, and Ohio--had adopted experimental programs using random vehicle inspection. The Michigan and Connecticut experiments lasted for 2 years and the other two States' programs for 1 year. NHTSA did not approve the California and Ohio programs as a permanent substitute for PMVI because they did not prove to be as effective as PMVI in identifying the safety condition of vehicles, or they had not provided adequate coverage to the States' entire vehicle population. The States did not adopt the uniform program prescribed by NHTSA either.

Of the remaining 11 States, 8 had completed their experimental programs. However, these States have not formally requested the Safety Administration to approve their substitute programs nor have any of these States adopted PMVI programs. Two States--Kansas and Wisconsin--

had not completed their programs by June 1977. The remaining State--Arizona--had never implemented its proposed experimental program which NHTSA had approved.

In 1975 NHTSA's policy permitted States to gradually implement the vehicle-in-use program requirements by modifying inspection standards on tires and allowing the removal of one wheel to inspect brake condition, instead of removing two wheels as required by the standards. All States were to implement the modified vehicle-in-use requirements by July 1976. Because tires and brakes were identified as the most critical factors affecting vehicle-related accidents, NHTSA referred to the interim requirements as "emphasis" inspection criteria.

To encourage States to phase in the emphasis criteria, the Safety Administration approved experimental inspection procedures proposed by nine States that were designed to determine the necessity of wheel removal. At the time of our review, only two States--North Carolina and Texas--had completed their programs. However, neither State has yet decided to incorporate wheel removal as part of its inspection procedures. One State--South Carolina--later withdrew from the program before completing it.

By the end of 1975, all but six States--Alabama, California, Illinois, Minnesota, Montana, and Oregon--had programs which, in effect, met NHTSA's approval until June 30, 1976, as making reasonable progress toward implementation of vehicle-in-use standards. However, only three States--New Hampshire, Pennsylvania, and Virginia--fully complied with the interim standards for inspection of tires and brakes.

NHTSA chose to test the application of its funding sanction authority on three States--California, Illinois, and Utah--over the issue of noncompliance by those States with motorcycle helmet standards. Because of strong negative reaction, the Congress subsequently placed a moratorium on NHTSA's sanctioning authority for failure of any State to implement an approved highway safety program.

Without sanction authority, NHTSA had to depend upon available research results to convince States that PMVI and vehicle-in-use standards were reasonable. Progress in State implementation then essentially stopped because NHTSA lacked sufficient data for a convincing argument.

The Highway Safety Act of 1976 (Public Law No. 94-280, 90 Stat. 451), temporarily lifting NHTSA's sanctioning authority, also required the Agency to evaluate the adequacy and appropriateness of the standards and report the results to the Congress by July 1, 1977.

CHAPTER 3

NHTSA'S EVALUATION OF VEHICLE INSPECTION STANDARDS

Although NHTSA still supports the concept of PMVI and the application of vehicle-in-use standards, it no longer advocates mandatory compliance.

In a July 1977 report to the Congress, DOT recommended a sweeping change of the Federal role in both the management and structure of the State highway safety program. DOT concluded that its means of achieving State compliance with standards (the use of sanctions) assessed "penalties" grossly out of proportion to the severity of the problem, especially when directed at obtaining compliance with standards whose value is not uniformly accepted.

The Department recommended that mandatory compliance with the 18 Federal highway safety standards is no longer appropriate because State safety agencies have developed to the degree where they are able to identify and address critical safety problems. The Department proposed that the present standards be replaced by uniform standards in:

- Rules of the road.
- Driver licensing.
- Vehicle registration, titling, and theft.
- Traffic control devices.
- Traffic records systems.
- Highway design, construction, and maintenance.

The remaining highway safety program standards, including vehicle inspection, would serve as guidelines to States. The Department would continue to provide, through these guidelines, the best information available as to the most effective means of implementing highway safety countermeasures. This would allow States wide flexibility in implementing their highway safety programs.

In evaluating the PMVI standard, NHTSA did not undertake an analysis of data showing the relationship of the standard and the number and severity of accidents. Rather, one of its most important data sources was a questionnaire on all the standard areas in cooperation with the Federal Highway Administration and the National Conference of Governors' Highway Safety Representatives, which sought responses from a total of 134 Federal and State agencies, private and public organizations, and universities. Thirty-one States and territories, Federal agencies, and private organizations submitted a response to NHTSA concerning the PMVI standard. These respondents' comments were collected

and analyzed for NHTSA by a private contractor. The contractor provided NHTSA with the following general comments on the responses:

"There seems to be general agreement among all respondents that some form of inspection activity for motor vehicles is a necessary part of a total traffic safety program. It is only when discussing specifics of those programs and the role of federally-promulgated Standards (requirements) that disagreement among respondents is noted.

"The major issues tended to be centered around the validity of the Standard requirements as the best way to resolve what appears to be an elusive but real problem. The respondents acknowledged the premise that vehicular defects are, to some extent, contributory to traffic accidents. There also seemed to be agreement that a well-run inspection program can detect certain vehicle deficiencies. However, there was considerable disagreement as to whether or not programs implemented in response to the existing Standard will result in an increased probability that vehicular defect-related accidents will be reduced. * * *

* * * * *

"The main issue seems to be centered around the question: Do we know enough about the problem, the alternative solutions, the potential benefits and costs to the public to be confident that the right approach has been selected?"

In its report to the Congress, DOT acknowledged its inability to substantiate the effectiveness of the PMVI or the other highway safety standards, stating that:

"* * * based on many years experience, it was evident that the evaluation of standards would not lead to the discovery of any clear linkage between any specific standard and changes in the number of accidents, injuries, or fatalities on a national level.

* * * * *

"This is not to say that the highway safety program and the standards do not improve safety. Rather, this is an admission of our inability to produce statistically verifiable data which convincingly demonstrate what our common sense tells us."

DOT's report did not address the effectiveness of the standards in technical terms. It principally addressed States' and highway safety organizations' opinions of the necessity for Federal standards. Thus, the study produced no additional objective data for evaluating the PMVI standard's contribution toward accident prevention or a reduction in their severity.

National Conference of Governors'
Highway Safety Representatives' Position

The National Conference of Governors' Highway Safety Representatives, an organization made up of officials responsible for managing and coordinating State and local highway safety activities, adopted a consensus position on vehicle inspection activities as part of the highway safety effort. The general theme of their position, as submitted to NHTSA, is summarized as follows:

"Rather than require or coerce the states toward periodic motor vehicle inspection programs, the Department of Transportation should broaden its policies to take into consideration all of its multifaceted approaches to traffic safety; and to evaluate the effect of a total program approach for maximum accident reduction potential versus such a heavy dependency on periodic motor vehicle inspection."

The National Conference proposed a bilevel approach to the inspection standard. States would be required to assess their particular needs and to establish an inspection program responsive to those needs, using as guidance Federal vehicle-in-use standards. At the second level, States would be given flexibility for adopting a program of selective inspection which best meets identified needs and contributes toward meeting established objectives, such as

- inspection of all vehicles over 3 years old,
- inspection of motor vehicles at the time registration is transferred to a new owner,
- random on-highway inspections of passenger vehicles,
or
- periodic inspection of vehicles which have significant potential for defects that cause accidents and can cause catastrophic results when involved in accidents.

CONCLUSION

We believe that this proposal offers an acceptable alternative to the present Federal inspection standards in that it calls for some form of motor vehicle inspection as a mandatory program requirement, but yet allows flexibility to States in designing and implementing a program that corresponds to their highway safety needs. In this way the States would be required to maintain an inspection program which identifies the specific types of vehicles within their total vehicle populations that are unsafe and establishes the necessary procedures to be followed in inspecting these vehicles. We also believe that the potential contribution of safety inspections for improving highway safety is too great to de-emphasize the standard as a completely optional program requirement, as proposed by DOT.

CHAPTER 4

MORE INFORMATION IS NEEDED TO PROVE

PERIODIC MOTOR VEHICLE INSPECTION IS BENEFICIAL

NHTSA relied too heavily on threats of sanctions to achieve compliance with PMVI and vehicle-in-use standards rather than developing data which would prove their value as accident-preventing measures. After issuance of vehicle-in-use standards, NHTSA did not follow through with the planned development and evaluation of a prototype inspection model which was intended to evaluate the standards. Although NHTSA sponsored other research for developing standards, it was not intended to address the question: Does PMVI reduce the number or severity of highway accidents to an extent that its cost and inconvenience is acceptable to vehicle owners? Many States required an answer to that question before willingly adopting the standards.

PROTOTYPE INSPECTION PLAN ABANDONED

NHTSA, in its April 1972 Vehicle-In-Use Program Plan, outlined a plan to develop vehicle safety performance criteria and set up prototype inspection programs to evaluate the effectiveness of vehicle safety inspections. NHTSA developed the safety performance criteria, or vehicle-in-use standards; however, the planned demonstrations were not carried out.

The plan's most important evaluation effort involved the comparison of accident statistics between one group of vehicles which had been subjected to vehicle inspections and another group of vehicles for which inspection and maintenance were left to the discretion of the owners. NHTSA planned to compare accident statistics of the two groups over a period of time to determine (1) the effect vehicle inspection had on the mechanical condition of the vehicles and (2) the impact the program would have on reducing the number of accidents caused by mechanical defects.

NHTSA also planned to conduct an evaluation in States which implemented the NHTSA-recommended inspection program where this new program was considered a significant improvement over the existing program. In these cases, accident statistics before and after implementation would be analyzed to determine the effect the new inspection criteria had on highway safety.

NHTSA officials stated that these planned demonstrations were not carried out because (1) in 1972 the Congress passed the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1961 et seq.) calling for the establishment of a diagnostic inspection demonstration program and (2) the 1973 court order prompted the issuance of vehicle-in-use standards prior to completing the planned tests. In response to the 1972 act, NHTSA shifted funding and program emphasis toward establishing diagnostic inspection facilities.

NHTSA RESEARCH

NHTSA undertook two major research efforts in support of its highway safety standards that had some relevance to PMVI and vehicle-in-use standards, since they both dealt, to a degree, with the causes of accidents. One was a multiple team effort coordinated in-house. It began in 1969 and was national in scope. The second study was under contract with Indiana University, Bloomington, Indiana and was confined to a selected county in that State. NHTSA also gathered data to demonstrate the economic feasibility of PMVI and vehicle-in-use standards. As discussed below, these studies have not produced conclusive evidence that would convince States that the standards are cost beneficial, nor does NHTSA have plans for developing the type of evidence needed.

Accident study

In 1968 NHTSA established multidisciplinary teams, which included specialists from such fields as law enforcement, medicine, engineering, and psychology, and dispersed them geographically throughout the country to investigate and analyze accidents in terms of the interaction of factors affecting the driver, vehicle, and roadway. This effort was undertaken to assist NHTSA in supporting its broad standard-setting authority. It related to PMVI and vehicle-in-use standards in that some of the investigations addressed incidents of vehicle defects as causes of accidents.

The study was not intended to address the question: To what extent would the accidents caused by vehicle failure have been prevented if the vehicles had been periodically inspected? We believe that this was essential evidence for assessing the value of PMVI and vehicle-in-use standards.

Indiana study

Indiana University began a 5-year study, costing about \$2 million, under contract with NHTSA in 1970. It differed from NHTSA's in-house study in two major respects:

- it dealt exclusively with identifying the incidence of causative factors in vehicle accidents, particularly the role of vehicle-related deficiencies, and
- it dealt with a limited geographical area, one county in Indiana.

On the basis of a multidisciplinary investigation of 2,200 accidents in the 5-year period and probability analysis of the data, the study concluded that 4 to 5 percent of accidents are "definitely" caused by vehicular factors. The study further concluded that 9 to 13 percent of these accidents were either "probably" or "definitely" caused by vehicular factors. Also, as many as 15 to 25 percent of accidents could be "possibly" caused by vehicular factors.

NHTSA used the Indiana study results to support its research program for identifying the specific vehicle components that needed to be inspected. This was intended to provide NHTSA with the basis for demonstrating to the States that significant numbers of vehicles involved in accidents do have mechanical defects or failures that cause or contribute to the severity of accidents.

As was the case with the NHTSA in-house study, the Indiana study was not designed to produce evidence of the effectiveness of NHTSA's PMVI and the vehicle-in-use standards in detecting potential mechanical defects. The Indiana researchers conducted an after-the-fact analysis of certain accident cases and attempted to measure whether the State's inspection program should have detected the defects. On the basis of this data, they concluded that the Indiana State inspection program could be improved by critically reviewing and revising the list of components inspected and improving the quality of its inspections. Consequently, the resulting statistics on vehicle failure may be reflective of inadequacies in the State's inspection program. For example, the study showed that massive brake failure was the cause of 43 to 63 percent of all accidents definitely caused by vehicle defects. These accidents had occurred at a time when braking integrity tests were not included in the inspections. Moreover, how many accidents could have been prevented or their severity lessened, if the tests required by NHTSA's vehicle-in-use requirements (including wheel removal for visual braking system inspection) had been applied in the inspection program, remains open to speculation.

Cost-benefit analysis

Despite the absence of data showing the effectiveness of PMVI in detecting mechanical defects, NHTSA did a study

in January 1975 which projected that safety benefits from PMVI could exceed the costs of the program even at a low percentage of effectiveness.

With 95 percent confidence in its statistics, NHTSA estimated that societal costs of accidents from vehicle defects were about \$1.6 billion annually. It estimated that safety inspection of the Nation's 101 million vehicles using its standards for maximum safety would cost \$618 million annually. Thus, if all vehicle-caused accidents were eliminated through safety inspections, the ratio of costs to benefits would be 1.0 to 2.6. Expressed another way, the study showed that if safety inspection were effective in reducing societal costs from vehicle-caused accidents by 39 percent, the benefits from inspection would equal its costs.

As discussed on page 14, NHTSA had not established through its own research how effective safety inspections are in detecting conditions that lead to accidents. For its study, NHTSA used statistics provided by the States of Texas and Nebraska to show that the effectiveness of PMVI in preventing accidents would fall within the range needed to equal inspection costs. Both States claimed a reduction in the number of defect-related accidents after adopting PMVI. Nebraska claimed that the number of fatal accidents involving defective vehicles on rural interstate highways decreased from 10 percent of all accidents in 1968 to 5.6 percent in 1972. For all rural State-wide accidents (fatal and nonfatal) the percentage dropped from 6.1 percent to 2.6 percent in the same period.

Texas claimed that the number of fatal accidents involving vehicles with safety defects dropped from 13 percent in 1951 to 3 percent in 1971. For nonfatal accidents, the percentage dropped from 12 to 4 percent in that period.

The results of the study provided support for or against PMVI and vehicle-in-use standards, depending upon the assumptions chosen. However, NHTSA did not attempt to prove that an effectiveness rate of 39 percent was a reasonable expectation, in spite of the Texas and Nebraska claims. The data gathered by these two States was not under controlled conditions and, therefore, was subject to an unknown error rate.

RESEARCH IN PROGRESS OR PLANNED

NHTSA had no plans to collect the type of data needed to establish, with a high degree of confidence, the relationship between PMVI and accident reduction or minimization. It has a data collection program underway which is designed to overcome some of the shortcomings experienced with its prior use of multidisciplinary teams to investigate and to establish the cause of accidents. NHTSA officials stated that they were concerned that the existing data bases lack the size and detail necessary to address the general nature of highway accident trends.

Established in November 1976 as a part of NHTSA, the National Center for Statistics and Analysis is establishing a National Accident Sampling System (NASS). NASS is to provide the accident data which is required to accomplish NHTSA's primary mission. Accordingly, NASS will

- collect nationally representative data using research teams,
- collect a large number of accident cases,
- serve as a continuous data-collection network, and
- provide a framework to conduct special studies on a timely basis.

Field data collection will be continuous through a minimum of 35 teams, each of which will investigate about 500 accident cases annually. At full implementation, NASS will cost about \$12 million to \$14 million annually.

In addition to routine data collection, NASS will be capable of ancillary studies to provide NHTSA with data for identifying particular safety problems and carrying out demonstration programs.

NHTSA officials told us that NASS alone does not have the potential for validating PMVI standards, or any of the other highway safety standards, because of its limited scope in accident investigations. To be useful in validating inspection standards, NHTSA officials said that extensive dismantling of the wrecked vehicles would be required to determine if mechanical defects caused, or contributed, to the accident. They told us that a separate research project would be needed to evaluate the effectiveness of PMVI and vehicle-in-use standards in preventing accidents.

NHTSA has no plans to begin such a research program, estimating that such a program would cost from \$15 million to \$20 million, and there is no assurance that it would produce conclusive evidence of the standards' validity.

CHAPTER 5

CONCLUSIONS, AGENCY COMMENTS, AND RECOMMENDATIONS

CONCLUSIONS

Vehicle defects can and do cause highway accidents, possibly as many as 15 to 25 percent, and contribute to the national death, injury toll, and major economic losses. Some types of defects, such as massive brake failure, have the possibility of leading to serious accidents.

It is possible that some accidents could be avoided by strict vehicle safety inspections, as prescribed by Federal standards. However, evidence has not been gathered to show how many could be avoided. Being unable to quantify the relationship between inspections and accidents, NHTSA has not convinced many States that adoption of the Federal standards is an essential part of their highway safety programs. The impasse that developed, in part, prompted DOT's July 1977 recommendation to the Congress that compliance with the standards be made optional.

Unless more convincing evidence of safety payoff of vehicle safety inspections is developed, it is unlikely that any additional States will fully adopt the present Federal standards under an optional arrangement. It is more likely that some States which partially meet the standards will begin to de-emphasize the standards, as some already have since the Congress temporarily lifted DOT's sanction authority in 1976.

NHTSA has neither devoted the time nor resources in the decade since the 1966 highway safety legislation was passed to explore fully the safety potential of vehicle safety inspections. The basic question remains: Does PMVI reduce the number or severity of highway accidents to an extent that its cost and inconvenience to vehicle owners is acceptable? Although NHTSA was aware that it needed to be in position to answer such a question and planned research which would respond to it while delaying issuance of inspection criteria and procedures, it did not follow through on its plans. After a 1973 court order prompted it to issue the inspection criteria and procedures, NHTSA sought to achieve States' compliance by threatening sanctions. This approach had limited effectiveness.

NHTSA's research has been devoted primarily to analyzing the causes of highway accidents. It has not

proven to what extent PMVI would be successful in identifying and correcting the conditions which lead to vehicle-caused accidents. NHTSA can do more to prove PMVI's effectiveness. One possibility is a controlled experiment, comparing vehicle-caused accident rates of a sample of inspected vehicles with a sample of uninspected vehicles, an experiment NHTSA had planned to perform in 1972 but did not. Other possibilities include controlled experiments comparing vehicle-caused accident rates in a State without a PMVI program with a closely comparable State with a federally approved program, or comparing the rates in one State before and after implementation of the Federal standards.

The Congress will be deciding whether to accept DOT's recommendation that States' implementation of the PMVI standards be made optional. It must do so without the benefit of conclusive evidence of the potential of vehicle inspections for saving lives, reducing the severity of injuries, and protecting property. It may decide, as some States have, that its potential is great enough that its implementation should not await the development of conclusive evidence that the costs are less than the benefits. It may decide, however, as other States have, that the burden of proving that benefits outweigh the costs and inconvenience to vehicle owners is upon the Federal Government before requiring non-complying States to adopt Federal standards. In either event, NHTSA should begin a program of thorough research to establish the relationship between PMVI and reductions in the number or severity of accidents.

Until such time as conclusive evidence can be developed to determine whether a periodic inspection program can reduce the number and severity of accidents, we believe that the Congress should require DOT to maintain an inspection standard that requires States participating in the highway safety program to adopt some form of motor vehicle inspection, but yet allows flexibility to States in implementing a program corresponding with their highway safety needs.

The potential of inspections for contributing to improved highway safety through identification of unsafe vehicles is too great, in our opinion, for it to be de-emphasized. If the recommended research establishes a high correlation between periodic inspections and accident reduction or minimization, the concept should become more politically acceptable to noncomplying States. This would reduce the level of Federal-State confrontation that has characterized implementation of the existing standards in the past few years.

AGENCY COMMENTS

During our review, we obtained oral comments from Department officials on matters discussed in this report and made changes as appropriate. Additionally, the Department agreed to provide us with written comments; however, such comments were not received when we began final processing of this report.

RECOMMENDATIONS

We recommend that the Congress

- reject DOT's recommendation that would make compliance with Federal vehicle safety inspection standards optional to the States,
- require a modification to the Federal standards which allows greater flexibility to States in determining the specific type of inspection program best suited to their highway safety needs, and
- direct DOT to undertake priority research into the effectiveness of periodic inspection standards for detecting and correcting vehicle defects before they lead to accidents and coordinate this research with States to help ensure acceptability of its results.

HIGHWAY SAFETY PROGRAM STANDARDS

<u>Standard number</u>		<u>Administered by (note a)</u>	<u>Date issued</u>
1	Periodic Motor Vehicle Inspection	NHTSA	6/27/67
2	Motor Vehicle Registration	NHTSA	6/27/67
3	Motorcycle Safety	NHTSA	6/27/67
4	Driver Education	NHTSA	6/27/67
5	Driver Licensing	NHTSA	6/27/67
6	Codes and Laws	NHTSA	6/27/67
7	Traffic Courts	NHTSA	6/27/67
8	Alcohol in Relation to Highway Safety	NHTSA	6/27/67
9	Identification and Surveillance of Accident Locations	FHWA	6/27/67
10	Traffic Records	NHTSA	6/27/67
11	Emergency Medical Services	NHTSA	6/27/67
12	Highway Design, Construction and Maintenance	FHWA	6/27/67
13	Traffic Engineering Services	FHWA	6/27/67
14	Pedestrian Safety	NHTSA-FHWA	11/2/68
15	Police Traffic Services	NHTSA	11/2/68
16	Debris Hazard Control and Cleanup	NHTSA	11/2/68
17	Pupil Transportation Safety	NHTSA	5/2/72
18	Accident Investigation and Reporting	NHTSA	5/8/72

a/ The Safety Administration administers the 14 standards related to drivers and vehicles and the Federal Highway Administration the 3 related to highways. Both agencies jointly administer the only standard (Pedestrian Safety) related to each of their areas.

Issued June 27, 1967

Highway Safety Program Standard 1**PERIODIC MOTOR VEHICLE INSPECTION****Purpose**

To increase, through periodic vehicle inspection, the likelihood that every vehicle operated on the public highways is properly equipped and is being maintained in reasonably safe working order.

Standard

Each State shall have a program for periodic inspection of all registered vehicles or other experimental, pilot, or demonstration program approved by the Secretary, to reduce the number of vehicles with existing or potential conditions which cause or contribute to accidents or increase the severity of accidents which do occur, and shall require the owner to correct such conditions.

I. The program shall provide, as a minimum, that:

A. Every vehicle registered in the State is inspected either at the time of initial registration and at least annually thereafter, or at such other time as may be designated under an experimental, pilot, or demonstration program approved by the Secretary.

B. The inspection is performed by competent personnel specifically trained to

perform their duties and certified by the State.

C. The inspection covers systems, subsystems, and components having substantial relation to safe vehicle performance.

D. The inspection procedures equal or exceed criteria issued or endorsed by the National Highway Traffic Safety Administration.

E. Each inspection station maintains records in a form specified by the State, which include at least the following information:

1. Class of vehicle.
2. Date of inspection.
3. Make of vehicle.
4. Model year.
5. Vehicle identification number.
6. Defects by category.
7. Identification of inspector.
8. Mileage or odometer reading.

F. The State publishes summaries of records of all inspection stations at least annually, including tabulations by make and model of vehicle.

II. The program shall be periodically evaluated by the State and the National Highway Traffic Safety Administration shall be provided with an evaluation summary.

COMPLIANCE BY INDIVIDUAL STATES WITH
VEHICLE SAFETY INSPECTION STANDARDS

AT JULY 1, 1977

29 STATES WITH PERIODIC MOTOR VEHICLE INSPECTION PROGRAMS

Arkansas	New Hampshire
Colorado	New Jersey
Delaware	New York
District of Columbia	North Carolina
Georgia	Oklahoma
Florida	Pennsylvania
Hawaii	Rhode Island
Indiana	South Carolina
Kentucky	South Dakota
Louisiana	Texas
Maine	Utah
Massachusetts	Vermont
Mississippi	Virginia
Missouri	West Virginia
Nebraska	

20 STATES WITHOUT PERIODIC MOTOR VEHICLE INSPECTION PROGRAMS

Alabama	Minnesota
Alaska	Montana
Arizona	Nevada
California	New Mexico
Connecticut	North Dakota
Idaho	Ohio
Illinois	Oregon
Iowa	Tennessee
Maryland	Washington
Michigan	Wyoming

Kansas and Wisconsin were administering a temporary experimental program of inspecting vehicles and, technically, in compliance with the standard.

STATES NOT COMPLYING WITH VEHICLE-IN-USE STANDARDS

With the exception of New Hampshire, Pennsylvania, and Virginia none of the States fully complied.

The following States partially complied by meeting the standards' requirement of wheel removal for braking system inspection:

Colorado
Georgia
Missouri
New York
Rhode Island
Utah
West Virginia

PRINCIPAL OFFICIALS
RESPONSIBLE FOR ADMINISTERING
ACTIVITIES DISCUSSED IN THIS REPORT

Tenure of office
From To

DEPARTMENT OF TRANSPORTATION

SECRETARY OF TRANSPORTATION:

Brock Adams	Jan. 1977	Present
William Coleman	Mar. 1975	Jan. 1977
John W. Barnum (acting)	Feb. 1975	Mar. 1975
Claude S. Brinegar	Feb. 1973	Feb. 1975
John A. Volpe	Jan. 1969	Feb. 1973
Alan S. Boyd	Jan. 1967	Jan. 1969

**ADMINISTRATOR, NATIONAL HIGHWAY TRAFFIC
SAFETY ADMINISTRATION (note a):**

Joan Claybrook	Apr. 1977	Present
Alan A. Butchman (acting)	Mar. 1977	Apr. 1977
John W. Snow	July 1976	Mar. 1977
James B. Gregory	Aug. 1973	July 1976
Vacant	Apr. 1973	Aug. 1973
Douglas W. Toms	Jan. 1970	Mar. 1973
Robert Brenner (acting)	Feb. 1969	Jan. 1970
William Haddon	Apr. 1967	Feb. 1969

**ADMINISTRATOR, FEDERAL HIGHWAY
ADMINISTRATION:**

William M. Cox	Apr. 1977	Present
Lester P. Lamm (acting)	Jan. 1977	Apr. 1977
Norbert T. Tiemann	May 1973	Jan. 1977
Ralph R. Bartelsmeyer (acting)	July 1972	May 1973
Francis C. Turner	Feb. 1969	June 1972
Lowell K. Bridwell	Apr. 1967	Jan. 1969

a/The predecessor agency, National Highway Safety Bureau, was part of the Federal Highway Administration before March 1970, and the title of Director changed to Administrator in July 1971.