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A Study to determine the feasibility of instituting a periodic motor vehicle inspection program for the State of Montana

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A STUDY TO DETERMINE THE FEASIBILITY OF INSTITUTING A PERIODIC MOTOR VEHICLE INSPECTION PROGRAM FOR THE STATE OF MONTANA

By

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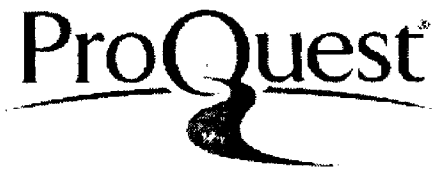

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CHAPTER I

INTRODUCTION

Statement of the Problem

The steadily increasing traffic accident and fatality toll in Montana as well as the nation should be cause for serious concern. The statistical story contained herein is a grim reminder of the pathos that continues to happen on the highways of Montana.

> I realize the compilation of the cold and impersonal facts, related in this report, is an inept method of attempting to convey to the public the agony, heartbreak, loneliness, and despair which result from the loss of life and personal injury incurred on Montana's streets and highways through motor vehicle collisions.[1]

However, the people of Montana need to be made totally aware of the existing problem in hopes of creating positive thinking and reacting in their approach to highway safety. The contents of this paper prove the responsibility of traffic safety cannot be delegated to our enforcement and judicial agencies alone. An effective program must have the full cooperation and active participation of every

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[1]Letter from Robert H. McKay, Chief, Montana Highway Patrol, Helena, Montana, April 18, 1972.

citizen in Montana. As you study the shameful accumulation of statistics contained herein, I trust you will resolve to assist in making Montana a safer state in which to drive and live.

Montana's streets, roads, and highways in 1972 were the scene of 313 fatal traffic accidents, accounting for the loss of life to 395 persons. This phenomenal total number of traffic deaths was the highest in the history of Montana. Speed too fast for conditions, drinking, or a combination of the two were factors in 210, or 67 per cent, of these fatal accidents. The remaining 103, or 33 per cent, were attributed to other causes such as mechanical failure of the vehicles due to maintenance or manufacturing, poorly marked highways which failed to alert motorists of an impending dangerous situation, poorly constructed, maintained, or engineered highways, or deficient highway driving experience, knowledge, and judgment.[1] A map of Montana is included (see Figure 1) showing the location of all the fatal traffic accidents in 1972. Along with this is another map reflecting the number of Montanans killed in traffic accidents by county for the years 1971 and 1972 (see Figure 2).

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[1]Department of Law Enforcement and Public Safety, Montana Highway Patrol Annual Report, 1972 (Helena, Montana: Department of Law Enforcement and Public Safety, Division of Motor Vehicles, 1972), (n.p.).

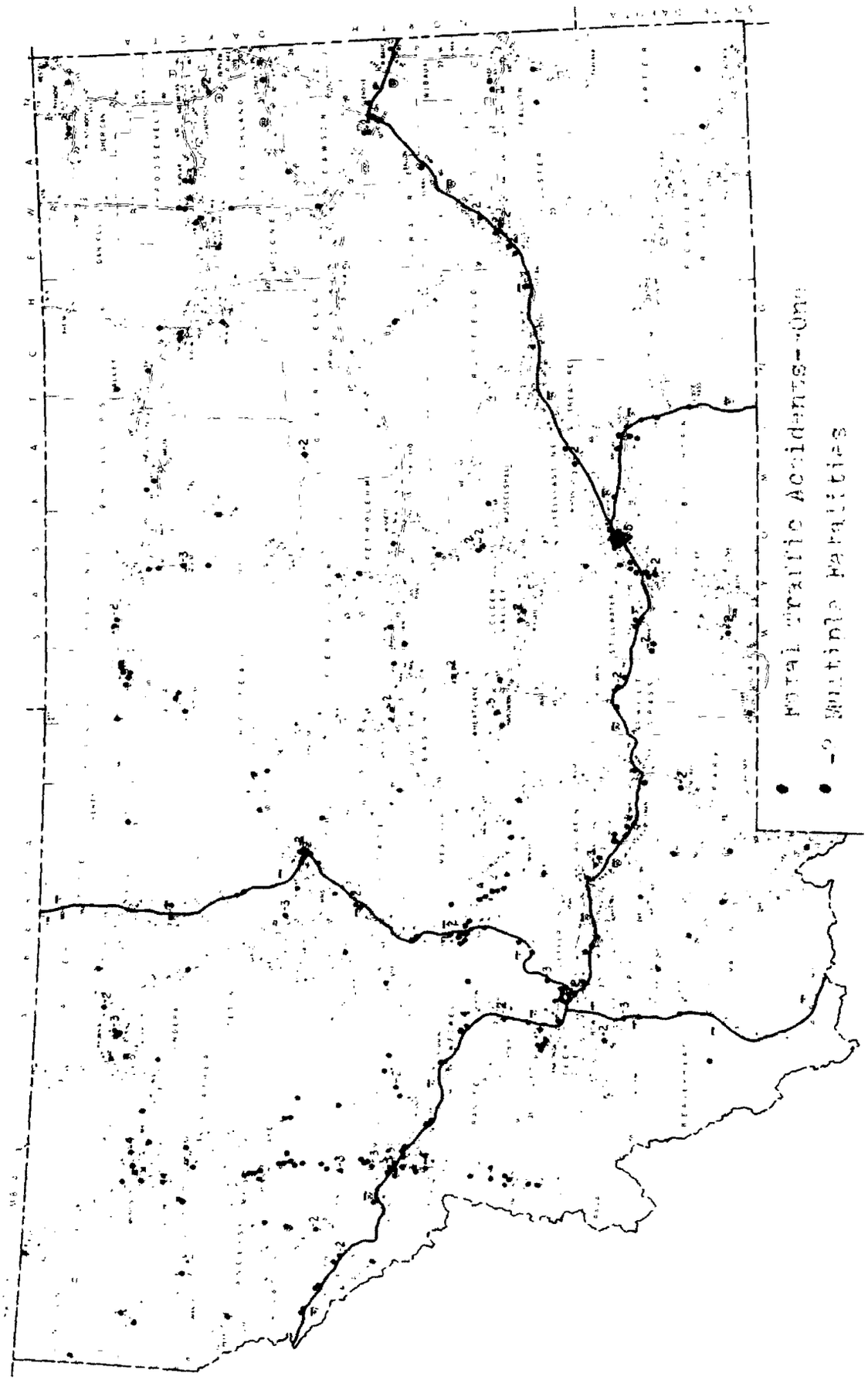

Fig. 1.--Location of fatal traffic accidents in Montana

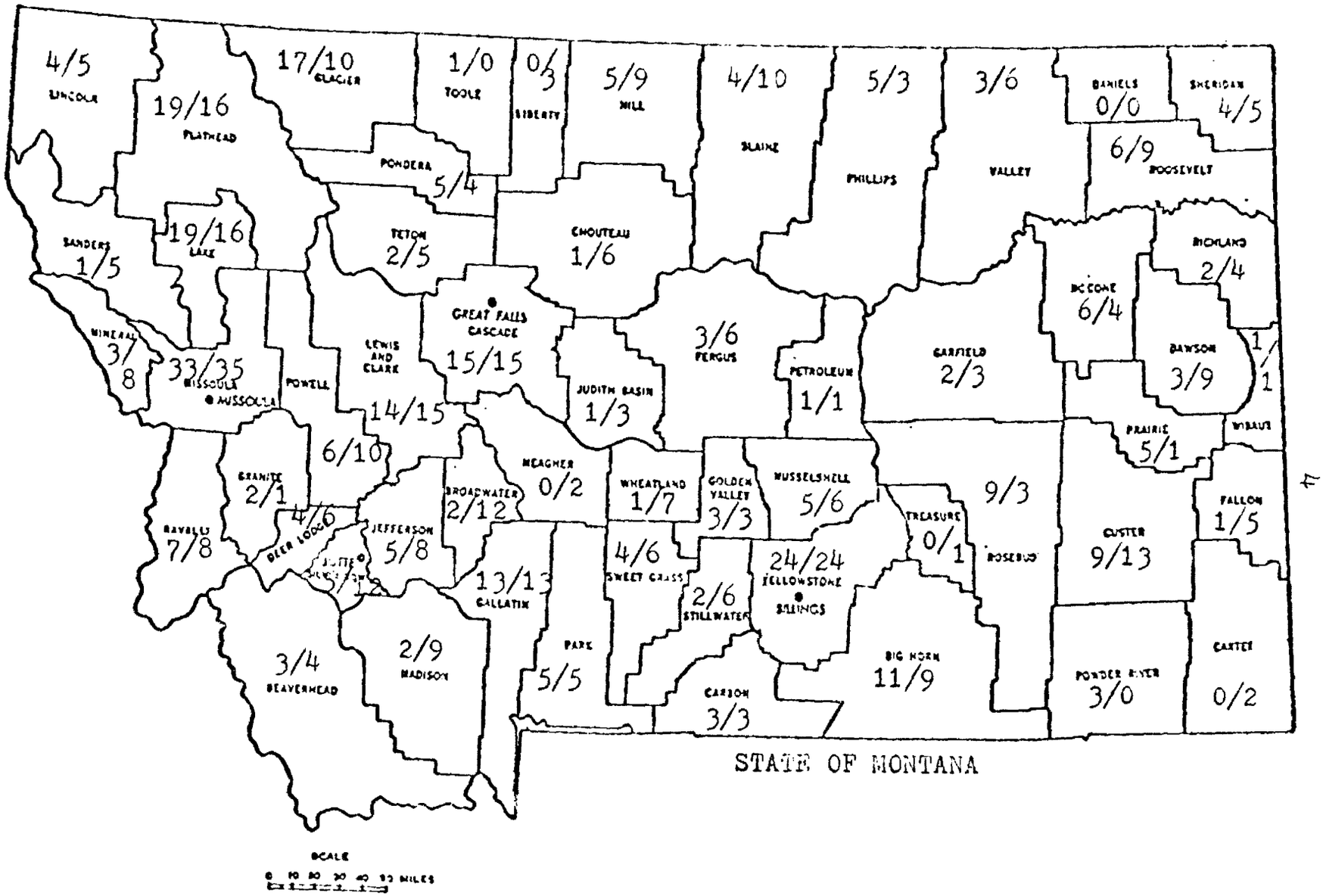

Fig. 2.--Montana Traffic Fatalities by Comparison 1971/1972

In 1972, Montana experienced the highest death rate per 100 thousand vehicle miles in the nation--7.1. This figure shows a definite increase over 1971 (6.5) and the 1972 figure was the highest in Montana since 1969. Because of the many variables which influence the overall safety picture, plus the lack of good reliable accident data, it is difficult to determine the reason for the dramatic upturn in the death rate for 1972. It is the author's belief that the affluence of our society is associated with this problem, resulting in more vacation type travel which exposes more motorists to the possibility of being involved in a motor vehicle accident. Due to better highways, the travel distances are probably farther, also increasing the exposure and maybe raising the accident risk factor because of increased fatigue. Due to improved highway construction, particularly in recent years, the speeds have increased and, even though the accident rates may not have increased significantly, the fatalities per accident due to higher vehicle speeds may be a significant and relevant factor in the upturn of the death rate in Montana. It is difficult to determine whether vehicle condition or lack of a periodic motor vehicle inspection played a significant part in the drastic increase in Montana's death rate. In any event, the changing trend certainly emphasizes the need for further investigation and research into this area. It can go without saying that had Montana required periodic motor

vehicle inspection, the death rate might have dropped due to the lower number of mechanically deficient vehicles present on the highways. Included is a seven-year history of Montana's traffic fatality and accident record (see Table 1), and a chart showing the motor vehicle death rate of Montana in comparison with the national average (see Figure 3).

This compilation of traffic statistics provides startling evidence of the serious problem Montana faces in its highway safety program. The basic problem faced in this study is the increasing number of traffic accidents and fatalities on Montana's highways. This fact cannot be ignored any longer and hopefully this study will shed some light onto a feasible solution to alleviate or minimize this problem for the citizens of Montana.

Objectives of the Study

During the last few years, there has been a growing concern nationally over the increasing number of highway fatalities. This concern has generated activity within many organizations leading to programs designed to establish a sound traffic safety situation on our nation's highways. The increasing number of highway accidents and fatalities has also generated government reaction at the federal level. Through federal legislation, highway safety programs and standards were established requiring states to adhere to and initiate certain highway safety programs.

TABLE 1

TRAFFIC DEATHS, MILEAGE TRAVELED, DEATH RATE AND FATAL ACCIDENT RATE IN MONTANA, 1966 THROUGH 1972

Year	Traffic Deaths	Mileage Traveled (Millions)	Death Rate[a]	Fatal Accident Rate[a]
1966	276	4149	6.7	5.5
1967	319	4234	7.5	6.1
1968	289	4085	7.1	5.9
1969	339	4439	7.6	6.3
1970	318	4867	6.6	5.3
1971	328	5079	6.5	5.4
1972	395	5563	7.1	5.6

[a]per 100 million vehicle miles

Source: Montana Highway Patrol Annual Reports 1966 through 1972, Department of Law Enforcement and Public Safety, Helena, Montana.

Some of these state programs are considered sound and valid. However, some "are questioned by many who feel that the proof of their effectiveness, as presently practiced, has never been established, in spite of the fact that such programs have been in existence for many years in various states."[1] This last quotation points out the characteristics of Montana's highway safety program and because of it Montana has the highest traffic death rate in the nation.

[1]AAA Foundation for Traffic Safety, A Study of Motor Vehicle Inspection, April 1967 (Washington, D.C.: AAA Foundation for Traffic Safety, April, 1967), p. 1.

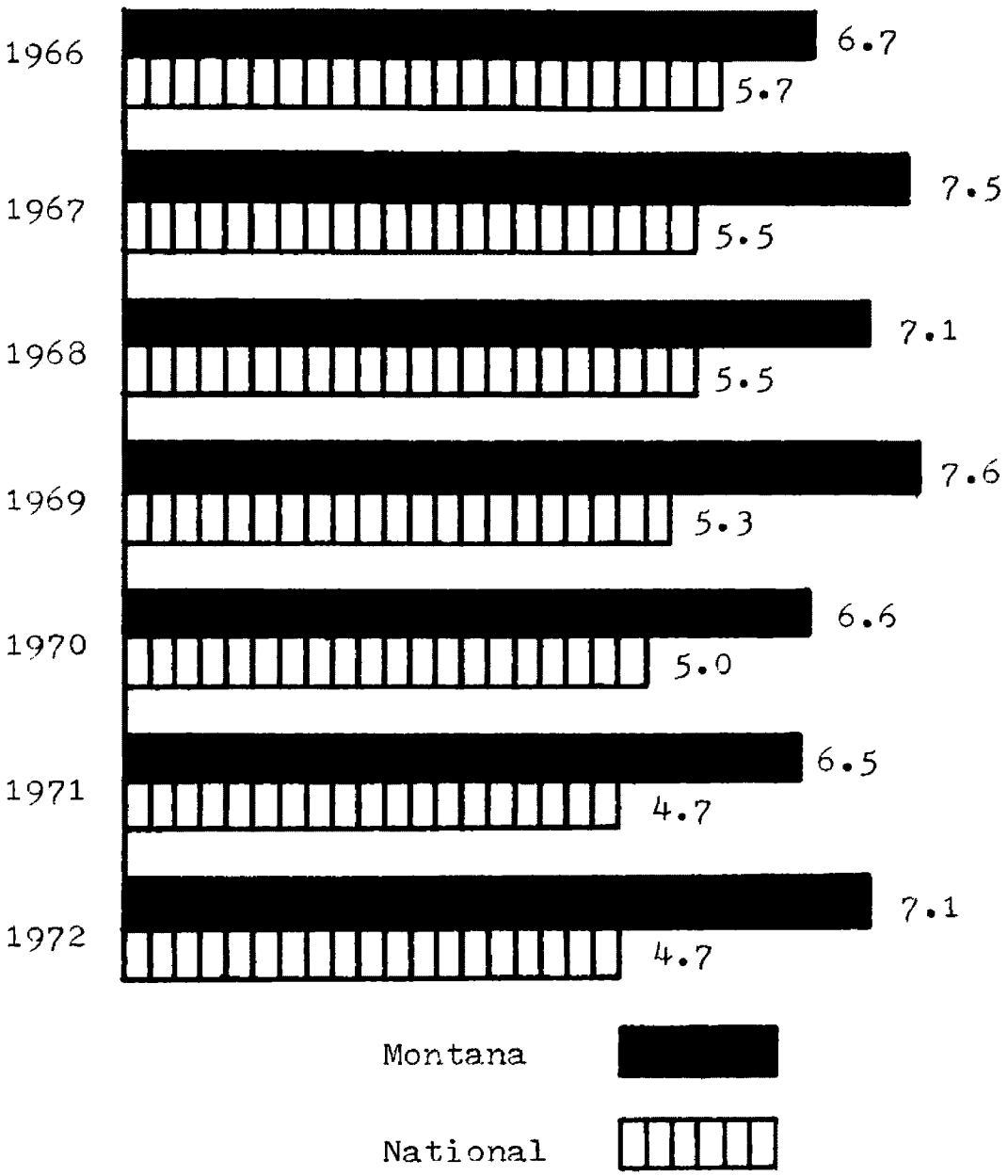

Fig. 3.--Comparison of Montana and National Death Rates per 100 million vehicle miles, 1966-1972.

It is the author's desire to contribute something worthwhile toward highway safety in Montana and for this reason this study was conducted. The broad objective of this study was to collect, analyze, and report on information relating to the effectiveness of periodic motor vehicle inspection in the United States and determine whether it has a place in the Montana highway safety picture. Out of this broad objective came several specific objectives listed below:

1. To develop a general periodic motor vehicle safety inspection system best suited for the State of Montana. This system is to be free of abuse, capable of gaining the confidence and support of Montana's citizens, and designed to improve Montana's highway safety posture.
2. To analyze, appraise, and report on the periodic motor vehicle inspection programs being operated in the United States. This objective includes consideration of what devices are checked, how the specific programs are carried out (including standards used), and by whom such diagnoses or inspections are made.
3. In view of the findings and other documented facts, to appraise and report on the validity and merit of benefits and drawbacks inherent to each motor vehicle inspection system and apply them in determining a valid inspection system for Montana.
4. To prepare a summary of findings, conclusions, and recommendations that will insure that the people of Montana will drive safer vehicles and

have the option of receiving an objective evaluation of their vehicle's performance through a periodic motor vehicle inspection system.

Methodology

A primary objective of this study was to analyze, appraise and report on the past history and present trends in motor vehicle inspection. At the outset of this study, letters were sent to federal and state officials active and knowledgeable in the field of motor vehicle inspection in the United States and Canada. The objectives of this study were outlined to them and a request was made for information, data, documents, and references relating to this area of endeavor. The responses from this initial letter were overwhelming and provided the author with a wealth of information and valuable sources.

Other valuable data were received through telephone and personal interviews with key people in the field of motor vehicle safety and inspection. Secondary data were obtained through the publications of federal and state agencies concerned with highway and public safety. Researching of previously conducted studies provided valuable information with which to evaluate and derive conclusive results and recommendations concerning periodic motor vehicle inspection.

Prior Attempts to Reduce Traffic Accidents and Fatalities in Montana

Periodic Motor Vehicle Inspection (PMVI) Legislation

Beginning on February 13, 1935, Representative Toomey of the Montana House of Representatives introduced House Bill No. 298. It was "an act providing for the appointment of official motor vehicle inspection stations...under the State Highway Commission."[1] This was the auspicious beginning of legislation attempting to bring periodic motor vehicle inspection to the State of Montana in order to reduce traffic fatalities and upgrade the quality of vehicles on the state's highways. This bill received great support in its inception, but eventually was killed on February 24, 1935. Year after year subsequent bills concerning the establishment of periodic motor vehicle inspection were introduced into the Montana legislature, including: House Bill No. 183 (1951), House Bill No. 390 (1957), Senate Bill No. 161 (1961), Senate Bill No. 129 (1963), House Bill No. 119 (1965), Senate Bill No. 152 (1967), Senate Bill No. 286 (1969), and Senate Bill No. 71 (1971). All the bills introduced called for some form of vehicle inspection, either in a state-owned or state-appointed system and each received the same reaction by Montana legislators--defeat. While most states were enacting legislation

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[1]Montana, House Bill No. 298 (1935).

to curb traffic accidents and deaths, Montana sat back and watched its death rate rise year after year until in 1972 it could go no higher; it was number one.

Reduction in Speed Limit

For the past forty years, Montana for the most part, has had a speed limit stating that motorists may travel on Montana's highways at any speed determined to be reasonable and prudent by the driver. However, reduced and restrictive speed limits have been put into effect at one time or another for night-time driving, dangerous sections of highway, mountainous grades and curves, and trucks or semi-trailers. Several attempts have been made through legislative action to reduce daytime speed limits in order to lessen the probability of accidents and fatalities caused by excessive speed and speed too fast for road conditions. Little support, however, has been received and most of the opposition has come from farmers, ranchers, and townspeople in the eastern counties of Montana where unlimited speeds have reduced the great distances traveled by these people.

> Montana had a sixty-five-mile-an-hour speed limit in the late 1950's before the legislature removed the powers of setting limits from the hands of the now defunct Highway Patrol Board. The speed limit went into effect in July of 1956 and was repealed in March of 1959. The Montana Highway Patrol reported the following traffic death statistics for the years the speed limit was in effect:
>
> -In 1956, with the limit in effect for less than six months, the death toll was 267.
>
> -In 1957, the death toll dropped to 210.

-In 1958, the death toll was reduced further to 193.
-In 1959, when the limit was imposed for less than four months, the death toll on roadways jumped to 248.[1]

This successful attempt to reduce traffic fatalities lasted less than three years. From the point of its cancellation, the death toll has risen steadily over the years until the pinnacle was reached this last year at 395. The data presented above are indicative of how speed limits affect traffic deaths. Speed limits are not the entire answer to Montana's highway safety program and it will not be the sole solution in reducing traffic deaths, but it is a start in the right direction. However, Montana has rejected it much to the probable regret, of the 111 Montanans who became traffic fatalities in 1972 because they were driving too fast.

Recent Attempts to Reduce Traffic Accidents and Fatalities in Montana

Accident Prevention Units

As a result of the Highway Safety Act of 1966, the Montana State Highway Patrol initiated a highway safety program entitled the Accident Prevention Unit. However, the program did not reach full-scale operation until October of 1972. The five-man units, funded by the old Highway Patrol Board through the Board of Crime Control, are designed to control traffic and prevent accidents through the use of

[1]"Speed Limit Has Votes to Pass Senate," Great Falls Tribune, December 29, 1972, p. 1.

highway roadblocks set up randomly on holidays and unannounced dates throughout the year. Their main purpose is to impart highway safety to the motorist in addition to checking driver licenses, vehicle registrations, mechanical deficiencies, and cases of drunken driving. There are six units, five of which are assigned to specific divisions within the state. The sixth unit, based in Helena, has jurisdiction over the entire state and patrols certain sections of the state's highways from time to time.[1]

Captain A. E. Buck of Great Falls, Commander of the task force, reported his men had issued 371 summons and 1,404 warnings to drivers during a month period from October 2, 1972 to November 2, 1972, on U.S. Highway 93. The north-south artery that winds its way through western Montana, had recorded 29 highway deaths in the first 9 months of 1972 and had earned the designation as being the worst road in the state. In October, the first month the prevention unit conducted saturation enforcement of the road, there were no traffic deaths.[2] Attorney General Robert L. Woodahl has stated that "the exposure of the Accident Prevention Unit and the knowledge of the public using the road that the unit is patrolling apparently has changed some driving habits."[3]

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[1]Robert L. Payne, Safety and Education Officer, Montana Highway Patrol, interview held at Highway Patrol Office, Great Falls, Montana, April 4, 1973.

[2]"Death Takes a Holiday on Bloody 93," Great Falls Tribune, November 2, 1972, p. 5.

[3]Ibid., p. 5.

The goal of the Accident Prevention Unit has been to stop motorists and either issue summons or warnings or impart messages of highway safety. It is felt that if the program is delivered in a courteous and thorough manner the number of traffic accidents and fatalities will greatly be reduced on Montana's highways. Unfortunately, winter weather and the limited number of units available make it a difficult program to carry out and enforce.

Senate Bill No. 97

This bill, introduced and sponsored by Senator G. W. Deschamps, Republican from Missoula, and thirty other lawmakers, was designed to "establish a maximum speed limit of seventy-miles per hour for any vehicle operated or driven on any public highway in Montana; and by deleting provisions relating to a maximum night-time speed limit."[1] The speed limit was determined through research into the rules and regulations that govern the neighboring states of Utah and Idaho. These states recently established new speed limit laws and Deschamps used this for the guidelines in his proposed legislation. The two states eliminated both night-time limits and truck limits on interstate highways and imposed a seventy-mile per hour limit for all traffic, night and day.

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[1]Montana, 43rd Legislative Assembly, Senate Bill No. 97 (1973).

> The problems of drinking drivers may be lessened with a speed limit and you will find...that many of the reports that come in deal with speed and drinking both. Often it is not known that a person is drinking until he is stopped because he is driving too fast for existing conditions.[1]

This comment by Senator Deschamps points out a benefit in imposing a speed limit--reducing the number of drinking drivers and, therefore, reducing the possibility of another traffic fatality attributed to drinking.

Montana's current speed laws provide no day-time limits on most highways, and speeding violations usually come during the day when a Montana Highway Patrolman determines a motorist is driving too fast for conditions, such as icy roads, poor visibility, or other conditions of the weather or of the road. It was hoped that the record traffic fatality rate would aid in the passage of Deschamps' speed limit bill. However, once again eastern Montana county proponents defeated the proposal and no speed limit was imposed on Montana citizens. Montanans are again subject to driving in a careful and prudent manner, and at a rate of speed no greater than is reasonable and proper under existing road conditions. Unfortunately, this means that 1973 will probably claim more than the 111 fatalities of 1972 attributed to excessive speed and the Montana fatality rate will again lead the nation.

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[1] "Record State Traffic Toll to Provide Ammunition for New Try at Speed Limit," Great Falls Tribune, December 29, 1972, p. 19.

Periodic Motor Vehicle Inspection: House Bill No. 494

The latest attempt to reduce accidents and fatalities on Montana's highways has come from House Bill No. 494, introduced into the 43rd Legislative Assembly of Montana by Representative Harrison G. Fagg, Republican from Billings. The bill proposes the establishment of a periodic motor vehicle inspection system to go into effect on January 1, 1974. The inspections are to be carried out by state-appointed or licensed stations located in garages, service stations, or shops throughout the state. Once a year, or upon transfer of vehicle ownership, vehicles will be inspected and owners charged five dollars for services rendered.[1] This proposed bill is the latest periodic motor vehicle inspection bill introduced into the Montana Legislature and apparently received the same type of reaction that all other previous vehicle inspection bills since 1935 have received--apathetic disfavor. While this bill was not defeated during this current legislative session, it did, however, receive enough or not enough support to be deferred to the 1974 Montana Legislature. The bill, presently in committee, will not die unless it is not acted upon by the 1974 State Legislature.

Of the three present attempts to reduce the death rate in Montana, the speed limit and motor vehicle inspection bills appear to be areas important enough to warrant

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[1]Montana, House Bill No. 494 (1973).

further research and study. These areas, if approached in the appropriate way, cannot help but reap benefits for the state in the form of fewer accidents and fewer deaths attributed to excessive speed and poorly maintained motor vehicles. Hopefully, Montanans will concern themselves enough to enact appropriate and necessary legislation to make a maximum highway speed limit and a compulsory motor vehicle inspection program a real and productive part of the Montana highway safety program.

CHAPTER II

THE NEED FOR A PERIODIC MOTOR VEHICLE INSPECTION SYSTEM

Introduction and Background

Another year has taken its toll of human lives and suffering on the streets and highways of our nation. Motor vehicle accidents caused death or injury to more than half of the 100,000 yearly deaths from all accidents (see Table 2),[1] a grave fact that cannot be ignored anymore. The steadily increasing traffic accident and fatality toll should be cause for serious concern by every automobile-driving American. Nearly four times as many deaths are attributed to highway accidents than from deliberate murder, and, in 1970, a murder was committed in the United States about every thirty-five minutes; a motor vehicle accident death happened every ten minutes. The cost of motor vehicle accidents in 1970 was estimated by the National Safety Council at $13.6 billion. This staggering figure includes wage losses of injured persons, medical expenses, and insurance administrative costs; plus an estimated $4.7 billion in property damage.[2]

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[1] "59,000 Killed Traveling in U.S. Last Year," The Sun, May 14, 1972, Sec. A., p. 4.

[2] Auto Dealers Traffic Safety Council, Facts You Can Use (Washington, D.C.: Highway Users Federation for Safety and Mobility, 1971), p. 3.

TABLE 2

TOTAL MOTOR VEHICLE DEATHS FOR THE YEARS 1971 AND 1972

State	Motor Vehicle Deaths (1971)	Motor Vehicle Deaths (1972)*
Alabama	1,250	1,243
Alaska	64	56
Arizona	755	807
Arkansas	693	750
California	4,462	4,974
Colorado	635	734
Connecticut	490	467
Delaware	115	131
District of Columbia	96	73
Florida	2,377	2,492
Georgia	1,798	1,825
Hawaii	154	145
Idaho	325	355
Illinois	2,400	2,240
Indiana	1,611	1,551
Iowa	828	872
Kansas	678	659
Kentucky	1,023	1,011
Louisiana	1,133	1,132
Maine	271	255
Maryland	793	805
Massachusetts	908	989
Michigan	2,145	2,255
Minnesota	1,024	1,017
Mississippi	944	920
Missouri	1,390	1,462
Montana	328	395
Nebraska	489	483
Nevada	269	258
New Hampshire	214	178
New Jersey	1,323	1,314
New Mexico	537	587
New York	3,227	3,174
North Carolina	1,835	1,973
North Dakota	227	225
Ohio	2,359	2,399
Oklahoma	995	843
Oregon	695	732
Pennsylvania	2,299	2,296
Rhode Island	124	121
South Carolina	1,023	1,084

TABLE 2--Continued

State	Motor Vehicle Deaths (1971)	Motor Vehicle Deaths (1972)*
South Dakota	262	293
Tennessee	1,362	1,414
Texas	3,594	3,667
Utah	337	381
Vermont	149	151
Virginia	1,218	1,247
Washington	876	853
West Virginia	508	523
Wisconsin	1,129	1,165
Wyoming	166	197
Total	53,907	56,003

*Preliminary figures

Source: U.S. Department of Transportation, Federal Highway Administration, Fatal and Injury Accident Rates on Federal-Aid and Other Highway Systems/1971 (Washington, D.C.: Government Printing Office, 1972), p. 25.

Mr. Victor Perini, Highway Users Federation for Traffic Safety and Mobility, Washington, D.C., telephone interview, April 13, 1973.

It is evident from the above statistics that vehicles are in less than perfect mechanical and physical condition when they come off the assembly line, or after a period of normal usage resulting in gradual wear and tear, deterioration, and maladjustment. The Department of Transportation reported to Congress the following:

> About half of the ninety-four million motor vehicles in use today are estimated to be deficient in critical aspects of safety performance. This condition is of concern to everyone--drivers, passengers, and pedestrians are all potential victims of poorly maintained vehicles. Furthermore, relatively few owners are able to judge the adequacy of corrective repair.

> The major conclusion of this report is that vehicle deterioration is an important factor in the etiology of accidents and that the Government and the general public share in immediate interest in and responsibility for upgrading the safety qualities of all vehicles permitted on public thoroughfares.[1]

To upgrade and improve our traffic safety record three elements need special attention in order to achieve this: the driver, the highway, and the vehicle. Drivers are examined periodically to determine their continued ability to drive a motor vehicle safely. Constant highway research continues to give us improved roads. Motor vehicle manufacturers add safety features to vehicles each year. However, the continued safety of the vehicle equipment depends solely upon the owner of the vehicle to maintain that vehicle in its best operating condition.

Some owners do their best to keep their vehicles in safe and proper working order while others do not have their vehicles serviced frequently and permit unsafe mechanical conditions to exist for a long period of time. Too often these defects are not detected until they have been a contributing factor in a traffic accident. In order to reduce the number of unsafe vehicles in operation on our highways, Congress enacted the Highway Safety Act of 1966. Its purpose is focused upon reducing the number of vehicles which have existing or

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[1]U.S., Department of Transportation, Safety for Motor Vehicles in Use (June, 1968), cited by Russell E. MacCleery, "The Value of Periodic Motor Vehicle Inspection to Motorists," a speech before the National Symposium on Diagnostic Vehicle Inspection (Washington, D.C., April 22, 1971), p. 1.

potentially unsafe conditions that contribute to many of these accidents or increase the severity of accidents which do occur. To accomplish this end, periodic motor vehicle inspection is a recommended procedure and practice. The Highway Safety Program Standard 4.4.1 states that the purpose for motor vehicle inspection is: "To increase, through periodic motor vehicle inspection, the likelihood that every vehicle operated on the public highways is properly equipped and is being maintained in reasonable safe-working order."[1]

Benefits of PMVI

Stated in its simplest terms, the subject of the last quotation taken from the Highway Safety Program Standard 4.4.1 is the principal benefit of periodic motor vehicle inspection. However, in addition to the primary benefit, there are still other benefits of periodic motor vehicle inspection to the individual motorist and the public:

1. As an important service to the motorist is an early warning of vehicles on the borderline of safety. For instance, a motorist who barely receives an "approved" sticker from an inspection station and is advised that his brakes only meet the minimum safety requirements is warned to remedy this soon, if not immediately, in order to avoid a possible accident due to a brake failure.

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated (Washington, D.C.: National Committee on Uniform Traffic Laws and Ordinances, 1969), p. 267.

2. Another benefit of PMVI to the motorist is an increased awareness of the necessity for keeping his vehicle in a safe operating condition at all times. One trip to the inspection center can mean the difference between life and death on the highway. First, it involves the driver directly with an act of traffic safety. Second, it educates the driver by involving him in watching the inspection being performed. What he is doing for traffic safety may save his life, the lives of his family, and the lives of others.

3. There are also economic benefits. First, mechanical problems can be corrected before they develop into major repair jobs, thus resulting in lower repair bills. Second, this preventive maintenance attitude will help the vehicle retain a higher resale value due to maintaining it at a level necessary to pass a thorough inspection.

4. "Law enforcement is bolstered in two ways: (a) PMVI detects violations of the law requiring all vehicles be maintained in safe driving condition, a law which every state has on its books; and (b) gives opportunity to check motor and serial numbers against owner registration card, an aid in both deterring and spotting car theft."[1]

5. An inspection program will prevent a state from becoming a dumping ground for vehicles which cannot pass an inspection in a neighboring state.

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[1]American Association of Motor Vehicle Administrators and Auto Industries Highway Safety Committee, Part 1: Motor Vehicle Inspection in Perspective, Motor Vehicle Inspection Reference Guide (Washington, D.C.: Auto Industries Safety Committee, Inc., 1966), p. 10.

6. The inspection has an effect of improving the quality of garage workmanship and the possibilities of increased business due to a compulsory inspection program.[1]

7. The rejection of a vehicle informs the owner that as a driver of an unsafe vehicle he is liable as a negligent party in the event of an involvement in an accident.[2]

8. Finally, the public becomes aware of what equipment deficiencies will not pass the annual or semi-annual inspection requirements and strives to correct these problems knowing the emphasis placed upon their safe operation. Thus, the public is found to be taking better care of their vehicles.

Relationship Between Accidents, Vehicle Condition, and Inspection

The theory that motor vehicle inspection contributes to safer vehicles and, therefore, reduces accidents and death rates has received a great deal of attention and study. The effect of inspection upon reducing accidents and deaths is more of an article of faith than a subject of objective research. Crash research generally can identify several causes which have interacted, or may have interacted, but it is extremely difficult to point out any one thing as the proximate cause. Far too often the investigation fails to determine if some vehicle defect was in the causal chain or a consequence

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[1] A Study of Motor Vehicle Inspection, April, 1967.

[2] Part 1: Motor Vehicle Inspection in Perspective, Motor Vehicle Inspection Reference Guide, p. 10.

of collision. A quick look at a demolished vehicle suggests the difficulties involved. Unfortunately, the same techniques (and an incredible number of dollars spent) used in the investigation of airplane crashes have not generally been applied to auto crashes. Thus, one finds such statements as that of the National Highway Traffic Safety Administration, which attribute some 7 per cent of the vehicle crashes to vehicle related defects. This percentage varies from 3 per cent to nearly 40 per cent in some studies.

Accident statistics on vehicle condition as a contributing factor have proven, at times, to be unreliable and inadequate for several reasons:

1. Vehicles are often damaged beyond the point that their mechanical condition before the accident can be determined. For example, if a vehicle has crashed into a tree due to a tire failure, it is quite possible that after the accident investigation the blown-out tire will go unnoticed as the cause of the accident.

2. The accident investigators generally lack the necessary training or experience needed to recognize evidence of pre-accident defects. For example: Did the severely worn tire tread cause the crash or did the crash cause the break in the tire tread? Frequently only a trained specialist can determine this answer.[1]

3. "Accident investigations tend to concentrate on the driver and driving conditions, exclusive of vehicle condition. For example, a car traveling seventy

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[1] Ibid., p. 11.

miles per hour blows a tire, goes out of control, and rolls over. Chances are the investigator would mark on his report: 'Cause of accident--speed.' Of course, the speed was too fast and perhaps the high speed caused the tire to fail. But had the tire not failed, the accident might not have happened."[1]

4. Accident investigation and reporting procedures lack uniformity in the way they are performed. This information often is misleading and inaccurate as far as defining accident causes.[2]

5. Drivers are reluctant to admit to any negligence on their part in regard to vehicle operation or maintenance. This reluctance is attributed to the fear of prosecution for contributory negligence and covers up any valid information concerning accident cause.

6. "Vehicles are often unsafe prior to an accident without the driver's knowledge due to lack of proper and frequent inspection."[3]

The major prior attempts to establish a relationship between the safety condition of motor vehicles and accident and death rates have largely been limited to the statistical correlation of motor vehicle inspection data and death rates. Using these methods, correlations were derived for motor vehicle accidents and death rates, as well as characteristics such as vehicle density, population, age, percentage urban population, and percentage of high schools with driver education. This approach, coupled with attempts to stratify states geographically and by sociological characteristics, represents the totality of the more serious, responsible studies.[4]

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[1] Ibid., p. 11.

[2] A Study of Motor Vehicle Inspection, April, 1967, p. 37.

[3] Part 1: Motor Vehicle Inspection in Perspective, Motor Vehicle Inspection Reference Guide, p. 11.

[4] Robert Brenner and others, State of the Art--Motor Vehicle Inspection (Washington, D.C.: U.S., Department of Transportation, National Highway Safety Bureau, 1971), pp. 382-83.

Many researchers refuse to say that there is a direct correlation between motor vehicle inspection and death rates on the basis that the data is non-comparable and unrelated. However, most of the findings in these studies strongly suggest that motor vehicle inspection tends to reduce vehicle accidents and deaths. Mayer and Hoult, in their article on motor vehicle inspection, say it is not meaningful to compare the motor vehicle death and accident rates of the various states because there are so many important social and technological variables. The authors make it clear that this type of relationship is statistical and does not necessarily imply causality. However, the total U.S. Highway death rate and the death rate for those states which have not invested in motor vehicle inspection systems must be considered when analyzing the reduced rates for inspection states. The conclusion that Mayer and Hoult arrived at was: "When the various states are categorized by inspection status on a four-point scale, there appears to be a clear relationship between low vehicle death rate and rigor of inspection systems" (see Table 3).[1] The motor vehicle death rates by state for the years 1971 and 1972 are compared in the table. Mayer and Hoult contend that the difference between the average death rate of 4.6 deaths per 100 million vehicle miles in inspected states compared with 6.9 deaths per 100 million vehicle miles in non-inspection states is so striking that it is hard to

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[1] A. J. Mayer and T. F. Hoult, Motor Vehicle Inspection: A Report on Current Information, Measurements, and Research (Detroit: Wayne State University, Institute for Regional and Urban Studies, 1963).

dismiss it as being a mere chance occurrence. The second conclusion that Mayer and Hoult had can be stated graphically as illustrated in Table 4.

> The extreme importance of vehicle inspection can be summarized by saying that if, between 1948 and 1960, all states had had vehicle death rates as low as those states with state-owned vehicle inspection systems, 168,381 Americans would not have died in motor vehicle accidents. This indicates that it is possible to save almost 15,000 lives a year, if we can isolate the factors accounting for the differential and apply our knowledge throughout the total United States.[1]

Conditionally stated, this study concludes that if all states had death rates as low as states with state-owned inspection systems, thousands of Americans would not have died on our highways.

McCutcheon and Sherman did a study of "The Influence of Periodic Motor Vehicle Inspection on Mechanical Condition."[2] The influence of periodic motor vehicle inspection on the mechanical condition of selected populations of motor vehicles is described in the study. The information below was found in the vehicle populations examined; the data is shown in Table 5.

(1) Vehicle populations subject to PMVI are in measurably better mechanical condition than vehicle populations not subject to PMVI.

(2) The mechanical condition of a vehicle population is measurably improved as the frequency of inspection increases.

(3) The number of mechanical defects per rejected vehicle decreases as the frequency of inspection increases.

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[1] Ibid., p. 35.

[2] Robert W. McCutcheon and Harold W. Sherman, "The Influence of Periodic Motor Vehicle Inspection on Mechanical Condition," Journal of Safety Research, Vol. 1, No. 4. (December, 1969), p. 193.

TABLE 3

MOTOR VEHICLE DEATH RATES BY STATES
FOR THE YEARS 1971 AND 1972

State	1971 Death Rate[a]	1972 Death Rate[a]	1971 Death Rate[b]	1972 Death Rate[b]
Alabama	6.8	5.8	6.2	5.7
Alaska	4.4	3.7	4.2	3.5
Arizona	5.7	5.4	6.4	6.4
Arkansas	5.7	5.6	6.5	6.7
California	3.8	3.9	3.7	3.9
Colorado	4.7	4.9	4.2	4.5
Connecticut	2.9	2.7	2.8	2.5
Delaware	3.6	4.0	3.6	4.0
District of Columbia	3.3	2.8	3.7	2.8
Florida	5.0	4.5	5.2	5.2
Georgia	5.7	5.2	6.5	6.3
Hawaii	4.2	3.6	3.6	3.3
Idaho	6.6	6.0	6.5	6.7
Illinois	4.2	3.6	4.5	4.0
Indiana	4.7	4.2	5.4	5.2
Iowa	4.4	3.9	4.5	4.6
Kansas	4.9	4.4	4.3	4.0
Kentucky	4.8	4.9	5.5	5.1
Louisiana	6.4	5.9	6.4	5.9
Maine	4.2	3.6	5.1	4.5
Maryland	3.6	3.5	4.0	3.8
Massachusetts	3.2	3.1	3.3	3.5
Michigan	3.9	3.9	4.5	4.5
Minnesota	4.4	4.1	4.4	4.3
Mississippi	7.7	6.7	7.9	7.5
Missouri	5.1	4.5	5.6	5.6
Montana	6.5	7.1	6.4	7.5
Nebraska	5.0	4.4	4.7	4.5
Nevada	7.4	6.4	7.3	6.5
New Hampshire	4.4	3.7	5.6	4.6
New Jersey	3.1	3.0	3.3	3.4
New Mexico	6.7	6.6	8.1	8.3
New York	4.5	4.2	4.4	4.5
North Carolina	5.9	5.7	6.1	6.2
North Dakota	5.7	3.5	5.1	4.9
Ohio	3.9	3.9	3.8	3.8
Oklahoma	5.3	4.2	5.6	4.5
Oregon	4.8	4.8	4.9	4.9
Pennsylvania	3.8	3.0	3.8	3.7
Rhode Island	2.5	2.1	2.5	2.3

TABLE 3--Continued

State	1971 Death Rate[a]	1972 Death Rate[a]	1971 Death Rate[b]	1972 Death Rate[b]
South Carolina	5.8	5.5	7.2	7.6
South Dakota	5.4	5.3	6.0	6.4
Tennessee	5.5	5.6	6.4	6.4
Texas	5.1	4.9	5.2	5.0
Utah	5.2	5.4	5.0	5.1
Vermont	5.0	5.1	6.1	5.9
Virginia	4.0	3.7	5.1	4.9
Washington	4.0	3.8	4.0	3.8
West Virginia	5.8	6.0	5.9	6.2
Wisconsin	4.8	4.2	5.1	5.1
Wyoming	5.2	6.1	6.3	7.3
National Average	4.5	4.5	4.7	4.8

[a]Traffic Deaths per 100,000,000 vehicle miles (1972 figures are preliminary.)

[b]Traffic Deaths per 10,000 Registered Motor Vehicles (1972 figures are preliminary.)

Sources: U.S. Department of Transportation, Federal Highway Administration, Fatal and Injury Accident Rates on Federal-Aid and Other Highway Systems/1971, pp. 1-36.

Mrs. Barbara Kararow, Statistical Branch, National Safety Council, Chicago, Illinois, telephone interview, April 11, 1973.

Mr. Victor Perini, telephone interview, April 13, 1973.

TABLE 4

NUMBER OF LIVES SAVED IF ALL STATES HAD DEATH RATES AS LOW AS STATES WITH STATE-OWNED INSPECTION SYSTEMS BY INSPECTION STATUS 1948-60

YEAR	STATE LICENSED PRIVATE GARAGES	STATES WITH SOME DEGREE OF INSPECTION	STATES CHANGING INSPECTION STATUS DURING PERIOD	STATES WITH NO INSPECTION	TOTAL UNITED STATES	NUMBER OF LIVES SAVED (A MINUS B*)
1948 A*	3,767	5,722	6,353	14,134	30,654	12,102
B	2,589	3,325	3,925	8,035	18,552	
1949 A	3,675	5,410	6,272	14,043	30,073	12,348
B	2,463	3,128	3,817	7,644	17,725	
1950 A	3,902	5,938	7,302	15,350	33,262	12,743
B	2,830	3,671	4,419	8,829	20,519	
1951 A	4,011	6,074	7,668	16,676	35,270	13,312
B	3,052	3,903	4,717	9,445	21,958	
1952 A	4,030	6,382	7,714	17,096	36,142	11,752
B	3,333	4,299	5,232	10,606	24,390	
1953 A	4,075	6,630	7,711	17,181	36,492	13,221
B	3,252	4,091	4,927	10,106	23,271	
1954 A	3,773	6,254	7,360	15,963	34,250	13,239
B	3,108	2,066	4,918	10,019	21,011	
1955 A	4,167	6,779	7,860	17,335	37,042	5,499
B	4,290	5,634	6,725	13,993	31,543	
1956 A	4,151	6,818	8,056	18,443	38,327	16,850
B	2,928	3,791	4,525	9,374	21,477	
1957 A	4,076	6,625	8,979	17,595	38,199	14,111
B	3,312	4,288	5,054	10,510	24,088	
1958 A	4,075	6,149	7,676	16,623	35,361	13,470
B	3,011	3,729	4,619	9,694	21,891	
1959 A	4,048	6,214	8,076	16,993	36,176	14,379
B	2,949	3,877	4,607	9,519	21,797	
1960 A	4,016	6,287	7,654	17,519	36,304	15,355
B	2,823	3,715	4,373	9,210	20,949	
Total 1948-1960						
A	51,766	81,282	98,681	214,951	457,552	168,381
B	39,940	49,517	61,858	126,984	289,171	

* "A" is the number of lives actually lost in motor vehicle accidents.
"B" is the number of lives that would have been lost if the State applied the same death rate as experienced in the State owned inspection states.

Source: A. J. Mayer and T. F. Moult, A Report on Current Information, Measurements, and Research, p. 46.

TABLE 5

THE INFLUENCE OF PERIODIC MOTOR VEHICLE INSPECTION ON MECHANICAL CONDITION

Inspections/Year	Rejection Rate	Defects per Rejected Vehicle
0	93.9	3.02
1	42.6	2.17
2	34.1	1.57
3	12.4	1.28

Source: McCutcheon and Sherman, "The Influence of Periodic Motor Vehicle Inspection on Mechanical Condition," p. 189.

Buxbaum and Colton, in their article on the "Relationship of Motor Vehicle Inspection to Accident Mortality," cite statistics that show a decrease in the death rate as the number of inspections per year increase. They compared motor vehicle mortality among males age forty-five to fifty-four in states which do and do not require motor vehicle inspection. They concluded that motor vehicle inspection has a beneficial effect in reducing death rates but offered no firm facts to that effect, merely a strong suggestion. This study, which is similar in certain respects to Mayer and Hoult's study, could not conclusively attribute motor vehicle accident mortality to specific mechanical failures. They also found statistically that states with inspection programs prior to 1950 showed a substantially reduced mortality rate compared with states which began inspecting between 1950 and 1960.[1]

[1]R. C. Buxbaum and Theo. Colton, "Relationship of Motor Vehicle Inspection to Accident Mortality," Journal of American Medical Association, Vol. 197, No. 1 (1966), p. 35.

Another study, conducted by the California Highway Patrol, entitled "Mechanical Factors in Fatal Vehicle Accidents," examined 409 single car accidents in California. Twenty-nine per cent of the vehicles were found to have had one or more pre-crash mechanical defects. It was also found that two out of three of these defects caused the accident or contributed to it. Tires, steering, and brakes were most often deficient, and older cars were more likely to have defects than newer cars. It was also noted that nearly all of the mechanical defects were attributed to wear and lack of maintenance rather than design or assembly flaws.

Fuchs and Levinson, in their study of "Motor Accident Mortality and Inspection of Vehicles," take the work of Buxbaum and Colton and extend the analysis a little further. Through a multivariate analysis, they concluded that "...this approach cannot yield definite results, but the evidence examined is consistent with the hypothesis that compulsory inspection reduces motor accident mortality by from five to ten per cent."[1]

The studies mentioned above indicate that mechanical defects are a major contributing factor to accidents and fatalities along with other factors. However, the data presented would seem to indicate that mechanical failure is a

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[1]Fuchs and Levinson, Motor Accident Mortality and Inspection of Vehicles, National Bureau of Economic Research, Inc., 1967, quoted in Robert Brenner and others, State of the Art--Motor Vehicle Inspection (Washington, D.C.: U.S. Department of Transportation, National Highway Safety Bureau, 1971), p. 383.

highly important factor; that motor vehicle inspection is a major contribution to highway safety; that it should be continued in states conducting inspections at this time, and adopted in those states which do not presently have such a program, Montana being one. Efforts should also be made to improve present motor vehicle inspection procedures.

While experts disagree as to exactly how many lives and dollars might be saved each year by really effective inspection programs, it is clear that defective, poorly maintained, improperly repaired cars are an important cause of highway death and destruction. The experts also disagree as to what is an effective method of curbing the increasing death rates on our highways. Some advocate stricter highway laws, more stringent dirver examinations, and driver education, while others proclaim periodic motor vehicle inspection as an important factor. The point is that no one has the final answer. Until an in-depth investigation uncovers meaningful data on causal relationships between accidents and defective vehicle condition, doubts about inspection need will persist.

William A. Raftery, Vice-Chairman of the National Motor Vehicle Safety Advisory Council, probably supports the idea of PMVI best from an excerpt of a speech he made in 1971 stating:

> ...notwithstanding the fact that some safety leaders represent that there is a lack of 'hard data' which establishes a direct association between the safe condition of motor vehicles and accidents and deaths, and though few authors claim to have established an irrefutable case, the findings of virtually every research

> study nevertheless strongly associate component degradation to accidents and fatalities, and motor vehicle inspections to substantial reductions in these accidents and deaths.[1]

There will always be critics of every custom, practice, or activity in which the human element is affected. This is as it should be. Generally, these critics demand statistics or other substantiating evidence. In regard to motor vehicle inspection, accident statistics and data are requested. Specifically, it is asked, "How many accidents are prevented by the inspection of motor vehicles?" This question cannot be answered with existing statistics. Not every fact or detail of fact is demonstrable by scientific methods or by the accumulation and compilation of numbers. For the purpose of discussion, let us consider some analagous questions: How many highway traffic accidents are prevented because there are highway patrolmen cruising our highways? How many fires never occur because there are periodic fire inspections in public buildings? How many children's lives are saved each year because we have school crossing guards? How many children are transported safely to and from school because the buses they ride are carefully inspected periodically? How many burglaries are prevented because there is a patrolman on the beat?

Because there is no available data on any of these activities, would anyone be so foolhardy as to advocate the

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[1]William A. Raftery, "The Unsafe Vehicles in Use--They're All Yours," a speech before Partnership in Safety Symposium, Key Biscayne, Florida, January 21-22, 1971.

elimination of these services to the public? The same type of question and answer can be given to the periodic motor vehicle inspection subject. It is something that is necessary for highway safety and public peace of mind, and should be duly considered as a possible remedy for the increasing death rates that occur on our nation's highways and in particular Montana's highways.

Federal Safety Requirements

Highway Safety Act of 1966

Deaths on U.S. Highways topped 50,000 annually by 1966, and 1970 marked the year that highway fatalities exceeded 500,000, just since 1960! By 1966 the chances were fifty-fifty that each American child born in that year would either be seriously injured or killed during his life-time. This catastrophic death rate led the President, in 1966, to urge legislation to enact an aggressive highway safety program to reduce the number of traffic deaths on American highways. The Congress reacted with the Highway Safety Act of 1966 (PL 89-564),[1] approved by the Secretary of Transportation "designed to reduce traffic accidents and deaths, injuries, and property damage resulting therefrom."[2]

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[1]U.S., Department of Transportation, Highway and Traffic Safety, 1970 (Washington, D.C.: Government Printing Office, n.d.), p. 34.

[2]U.S., Statutes at Large, Vol. LXXX, pt. 1 (1966), Public Law 89-564, p. 731.

The Secretary of Transportation is authorized to establish uniform standards which each state program must meet. Presently there are sixteen standards in effect. The purpose of these standards is: (1) to improve driver performance (including driver education, on-the-road testing of driver skill, driver examinations, and driver licensing); and (2) to improve pedestrian performance. In addition, the standards include provisions for an effective record-keeping system for accidents; accident investigation to determine the cause of accidents, injuries, and deaths; motor vehicle registration and inspection; highway design, construction, and maintenance; traffic control devices; codes and laws; traffic courts; identification and surveillance of accident location; police traffic and emergency medical services; alcohol safety; and debris hazard control and clean-up services.

Each state's highway safety program is evaluated annually and all sixteen standards listed in the status report chart (see Table 6), are scored 0 to 100 depending upon their performance and effectiveness. Those scores circled reflect either a deficiency or no state initiation of that standard. For example, Montana received a circled zero under Standard 301 (Periodic Motor Vehicle Inspection) because at this time Montana has no PMVI program in operation. Also, any score less than fifty is circled and reflects needed improvement of that standard. The total score is tallied at the bottom of the chart and states are arranged in three categories: above average, average, and below average--depending

upon the total score received. (Montana received 1157 points and placed in the average category, despite not having a periodic motor vehicle inspection program.)

Highway Safety Program Standard #1

Highway Safety Program Standard #1 (first of 16) is concerned with periodic motor vehicle inspection. The Secretary of Transportation issued this Standard on June 27, 1967, setting forth the minimum objectives for that portion of a state program concerning vehicle inspection. The stated purpose of this standard is "to increase, through periodic motor vehicle inspection, the likelihood that every vehicle operated on the public highways is properly equipped and is being maintained in reasonable safe-working order."[1]

This standard calls for each state to have a program for periodic inspection of all vehicles (or some other experimental or pilot program) in order to reduce the number of vehicles that have conditions "which cause or contribute to accidents which do occur, and shall require the owner to correct such conditions."[2]

The Secretary is also given authority to reduce by 10 per cent any federal-aid highway funds apportioned to a state which does not implement an approved highway safety program. In other words, if Montana does not comply with this standard, the state could be assessed a penalty of nearly $15 million or 10 per cent of the federal-aid highway funds in fiscal year 1973.[3]

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[1] National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 267.

[2] Ibid. [3] Ibid., p. 266.

TABLE 6

STATUS CHART OF SIXTEEN STANDARDS UNDER THE HIGHWAY SAFETY ACT OF 1966

ABOVE AVERAGE

STANDARD	Va	N.H.	Del	S.D.	Me	Colo.	D.C.	Mass	Utah	N.Y.	Mich.	Calif	Penn
Periodic Motor Vehicle Inspection (301)	100	100	85	100	85	85	100	85	85	100	50	50	88
Motor Vehicle Registration (302)	100	100	82	100	100	96	82	100	100	100	100	96	100
Motorcycle Safety (303)	100	100	100	100	95	100	100	100	50	100	90	(45)	95
Driver Education (304)	85	100	90	90	90	70	90	100	100	85	90	100	100
Driver Licensing (305)	94	89	82	65	83	72	72	79	98	69	84	99	52
Codes and Laws (306)	100	100	100	100	100	100	80	(0)	100	100	100	(0)	80
Traffic Courts (307)	80	90	100	70	100	90	100	100	80	90	70	90	70
Alcohol Safety (308)	80	95	100	80	90	95	50	75	95	95	95	95	95
Identification & Surveillance of Accident Locations (309)	87	61	91	67	(17)	75	90	81	66	(36)	61	77	68
Traffic Records (310)	90	81	74	71	100	80	81	91	81	81	100	99	100
Emergency Medical Services (311)	100	75	75	100	85	60	(15)	75	50	(25)	(15)	55	(65)
Highway Design, Construction & Maintenance (312)	83	61	66	65	53	73	77	63	70	61	68	82	76
Traffic Control Devices (313)	92	90	86	63	62	74	78	63	(14)	65	66	90	58
Pedestrian Safety (314)	90	84	81	77	66	57	91	86	71	74	84	85	57
Police Traffic Services (315)	95	79	72	83	74	92	52	91	79	76	95	92	78
Debris Hazard Control & Cleanup (316)	100	100	100	100	100	100	100	100	100	80	80	100	100
TOTALS	1485	1405	1387	1336	1325	1322	1266	1261	1262	1260	1258	1255	1254

AVERAGE

STANDARD	Idaho	Md.	Ohio	N.J.	Ariz.	Minn.	Ore.	Wash	S.C.	Wisc.	N.C.	Conn.	Ill.	Mont.	Tex.	Mo.	Tenn.	R.I.	Hawaii	N.M.	Okla.	Fla.	La.	Vt.	Ark.	Neb.	Ky.
Periodic Motor Vehicle Inspection (301)	88	(0)	(0)	93	(0)	(0)	(0)	(0)	98	(0)	88	(0)	(0)	(0)	87	100	(0)	88	88	84	88	100	88	100	88	88	88
Motor Vehicle Registration (302)	87	100	100	100	96	96	100	100	69	100	100	96	73	69	96	100	100	100	82	96	73	50	100	100	96	69	69
Motorcycle Safety (303)	65	90	90	100	90	85	75	90	100	90	70	90	(40)	60	85	85	90	100	100	65	55	75	100	100	75	(40)	100
Driver Education (304)	100	100	90	75	73	97	75	100	100	100	100	86	100	90	75	80	90	53	75	100	90	75	75	90	60	75	100
Driver Licensing (305)	77	69	51	53	92	90	53	88	73	73	85	59	60	80	75	67	55	81	87	65	50	65	100	(46)	54	66	54
Codes and Laws (306)	100	100	(70)	100	100	100	100	100	100	100	(50)	100	100	100	100	80	100	100	100	100	100	100	100	(0)	100	100	80
Traffic Courts (307)	100	100	90	90	100	60	70	55	70	60	90	100	100	70	60	75	60	90	80	80	60	80	(40)	80	80	(40)	(5)
Alcohol Safety (308)	75	75	95	75	95	100	100	95	80	75	95	95	90	100	80	60	95	80	100	80	60	80	95	100	100	80	100
Identification & Surveillance of Accident Locations (309)	59	55	65	(36)	54	57	78	89	50	58	76	60	64	56	54	54	(45)	(49)	(21)	(49)	66	64	(39)	55	(31)	(41)	(11)
Traffic Records (310)	67	100	100	81	66	81	81	86	69	81	100	81	81	57	81	81	86	73	71	67	67	57	81	81	74	62	84
Emergency Medical Services (311)	(25)	65	100	(10)	90	65	(35)	(15)	(40)	50	(45)	(25)	90	100	60	(25)	(10)	60	(10)	55	(40)	(25)	(35)	(35)	(0)	(15)	70
Highway Design, Construction & Maintenance (312)	68	53	67	60	58	78	75	75	67	67	67	53	65	63	63	52	62	56	(38)	(35)	(49)	66	(41)	61	(41)	53	53
Traffic Control Devices (313)	54	68	67	74	62	75	77	62	(49)	82	70	71	67	67	58	(43)	74	50	57	(39)	68	63	50	62	(20)	(30)	53
Pedestrian Safety (314)	77	79	77	64	68	85	69	57	69	57	(45)	71	81	73	(49)	78	61	(29)	56	68	52	80	(39)	70	60	73	53
Police Traffic Services (315)	95	79	76	84	90	97	97	72	82	73	72	75	89	92	75	81	62	(24)	(44)	(24)	97	68	82	60	84	71	60
Debris Hazard Control & Cleanup (316)	100	100	100	95	72	(40)	75	55	50	100	(40)	100	60	80	50	80	100	58	80	80	59	(10)	(0)	(0)	70	100	(10)
TOTALS	1235	1233	1219	1210	1206	1206	1204	1169	1166	1166	1163	1162	1160	1157	1148	1141	1093	1091	1089	1087	1074	1058	1051	1040	1036	1033	1032

BELOW AVERAGE

STANDARD	Nev.	Wyo.	Ga.	P.R.	N.D.	Ind.	W.Va.	Iowa	Miss	Kan.	Alaska	Ala.
Periodic Motor Vehicle Inspection (301)	(0)	88	100	80	(0)	88	85	(0)	76	(0)	(0)	(0)
Motor Vehicle Registration (302)	96	50	100	96	87	100	69	50	(45)	50	61	82
Motorcycle Safety (303)	90	(10)	75	75	85	70	75	(40)	(10)	(0)	65	93
Driver Education (304)	100	86	80	(11)	65	(46)	85	90	70	90	(43)	(44)
Driver Licensing (305)	80	59	(42)	(42)	63	83	(37)	63	(45)	(49)	(46)	(43)
Codes and Laws (306)	100	100	100	100	100	100	100	100	100	100	80	(0)
Traffic Courts (307)	(15)	70	(25)	100	60	50	50	(35)	(0)	70	80	(25)
Alcohol Safety (308)	100	75	95	75	100	80	80	70	65	55	75	85
Identification & Surveillance of Accident Locations (309)	(36)	(47)	50	54	(40)	(22)	(30)	(33)	50	(23)	(46)	51
Traffic Records (310)	80	53	69	63	71	81	68	53	68	57	56	76
Emergency Medical Services (311)	(45)	(35)	(25)	(0)	65	(0)	(0)	(20)	(30)	(15)	(15)	50
Highway Design, Construction & Maintenance (312)	(63)	71	60	(47)	(41)	71	(47)	59	(45)	(49)	(46)	(47)
Traffic Control Devices (313)	(26)	70	59	73	55	71	(45)	62	50	50	(42)	(45)
Pedestrian Safety (314)	75	78	61	59	(31)	52	(41)	66	67	58	(33)	(41)
Police Traffic Services (315)	64	(45)	(45)	75	80	(24)	(30)	92	(19)	97	(26)	72
Debris Hazard Control & Cleanup (316)	(30)	70	(10)	(40)	(8)	(0)	(40)	50	100	64	(45)	(0)
TOTALS	1010	1007	995	986	953	938	884	883	861	826	759	735

Source: Insurance Institute for Highway Safety, Status Report, April 4, 1972.

Highway Safety Program Manual Volume 1

The Highway Safety Program Standard #1 has an accompanying manual called the Highway Safety Program Manual Volume 1, "Periodic Motor Vehicle Inspection." The manual is an enlargement on the Standard.

> It gives more detail on periodic programs; and it explains the purpose, the authority, and general policies of an inspection program, and methods of operation. It also discusses the records, reports, and methods of evaluation of an operating program. Most of the manual was prepared by people who are currently operating programs and, thus, it reflects the current state of operating practices in the states with existing programs. It is not, therefore, a document devoted to new or advanced concepts relating to vehicle maintenance or analysis.[1]

National Traffic and Motor Vehicle Safety Act of 1966

Another important law, the National Traffic and Motor Vehicle Safety Act of 1966, defines in its opening paragraph its purpose: "to reduce traffic accidents and deaths and injuries to persons resulting from traffic accidents."[2] Among other things, the law requires that the Secretary of Commerce establish Federal motor vehicle safety standards for motor vehicles and equipment in interstate commerce. These standards are issued periodically for tires, brakes, windshields, head restraints, etc., and are compiled

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[1] State of the Art--Motor Vehicle Inspection, p. 387.

[2] U.S., Statutes at Large, Public Law 89-563, p. 718.

in the Federal Motor Vehicle Safety Standards and Regulations (issued by the Department of Transportation).

These standards must meet the following criteria: (1) meet the need for motor vehicle safety, i.e., they must be directed toward protecting the public from unreasonable danger resulting from design, construction, and performance of vehicles; (2) the standards must be design and production feasible; and, (3) standards must be capable of objective measurement.[1]

The Highway Safety Act of 1970

Until March, 1970, the National Highway Safety Bureau (NHSB) was an agency of the Federal Highway Administration (FHWA). At that time, it became one of the operating administrations of the Department of Transportation. This administrative action became law when the Highway Safety Act of 1970 was enacted in December. At that time, the NHSB became the National Highway Traffic Safety Administration (NHTSA).

> Under these arrangements, responsibility for developing and administering the sixteen highway safety program standards is shared between the Federal Highway Administration and the National Highway Traffic Safety Administration. FHWA is responsible for the programs, research, and development relating to highway design, construction and maintenance, traffic control devices, identification and surveillance of accident locations, and highway-related aspects of pedestrian safety.[2]

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[1] U.S., Statutes at Large, Public Law 89-563, pp. 718-730.

[2] U.S., Department of Transportation, Highway and Traffic Safety, 1970, p. 1.

Even though the Highway Safety Act of 1970 amended the 1966 Act, it did not change the Highway Safety Standards or the motor vehicle inspection requirements.

Uniform Vehicle Code

The Uniform Vehicle Code was first published in 1926, but not until 1934 did requirements for periodic inspection of motor vehicles first appear. Since that time the Code has been revised twice, once in 1938 and again in 1968. The Code is a specimen set of motor vehicle laws, designed as a comprehensive guide or standard for state motor vehicle and traffic laws. It is based upon actual experience of various state laws throughout the country.

CHAPTER III

A COMPARISON OF PERIODIC MOTOR VEHICLE SAFETY INSPECTION SYSTEMS

Introduction, History, and Background of Periodic Motor Vehicle Inspection

The periodic inspection of motor vehicles is intended to insure that all parts or components of the vehicle meet or exceed some specific standard of performance. Most motor vehicle inspections are designed to accommodate the motorist with a sequential inspection procedure programmed to progress at a fairly rapid pace to expedite the number of vehicles inspected. If the inspection program is compulsory, those vehicles which do not meet specific safety standards of operation and fail an inspection must be brought up to these specified standards within a given time period and be submitted for re-inspection.[1]

This segment of the paper will cover the history of periodic motor vehicle inspection and an in-depth comparison of the inspection systems employed by our states at the present time. Included under each system will be a

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 19.

descriptive analysis, specific programs in use, and the resulting benefits and drawbacks derived from them.

History of PMVI

In 1926, Massachusetts became the first state to institute a voluntary motor vehicle inspection program. A year later the governors of Maryland, Massachusetts, and New York proclaimed "Save-A-Life" campaigns in which motor vehicle owners had their automobiles inspected by designated garages under a strictly voluntary basis. A similar program was initiated by Pennsylvania in 1928 for a one-month voluntary inspection period.

> ...to check lights, brakes, steering, windshield wipers, mirrors, and owner registration cards. Only 42 per cent of some 750,000 vehicles inspected in this pioneering inspection were considered to be in safe driving condition. Startled by these findings, those interested in highway safety supported a recommendation by the Governor to the Legislature that a law be enacted requiring an annual inspection of motor vehicles in Pennsylvania. The law was later amended to make the inspection semiannual.[1]

By the close of 1933, Connecticut, Delaware, Maine, New Hampshire, Rhode Island, Vermont, and Virginia had joined Maryland, Massachusetts, and Pennsylvania in enacting legislation requiring periodic inspection at private, officially designated inspection stations.

By 1940, seven more states and fifteen cities had enacted compulsory vehicle inspection laws. "During this

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[1] Part 1: Motor Vehicle Inspection in Perspective, Motor Vehicle Inspection Reference Guide, p. 23.

time, inspection standards were developed and approved by the National Conference on Street and Highway Safety, and a motor vehicle inspection code was approved by the American Standards Association.[1] When World War II started, inspection programs in more than seventeen states and fifteen cities were abandoned or sharply curtailed. After 1945, activity and interest in vehicle inspection was revived, and, by the end of 1966, compulsory vehicle inspection laws were in effect in twenty states and the District of Columbia.

After the Highway Safety Act of 1966 was passed, eleven more states enacted periodic vehicle inspection laws. At the present time, thirty-one states and the District of Columbia have laws requiring periodic inspection of all, or virtually all, registered motor vehicles at either privately owned, officially designated facilities or at government operated stations, (see Figure 4 and Table 7). Of the remaining nineteen states that do not have laws requiring periodic inspection of all registered vehicles on a statewide basis, eight conduct random inspection programs, six inspect only certain vehicles or authorize inspections on a local level, and five states (including Montana) have no formal motor vehicle inspection program.

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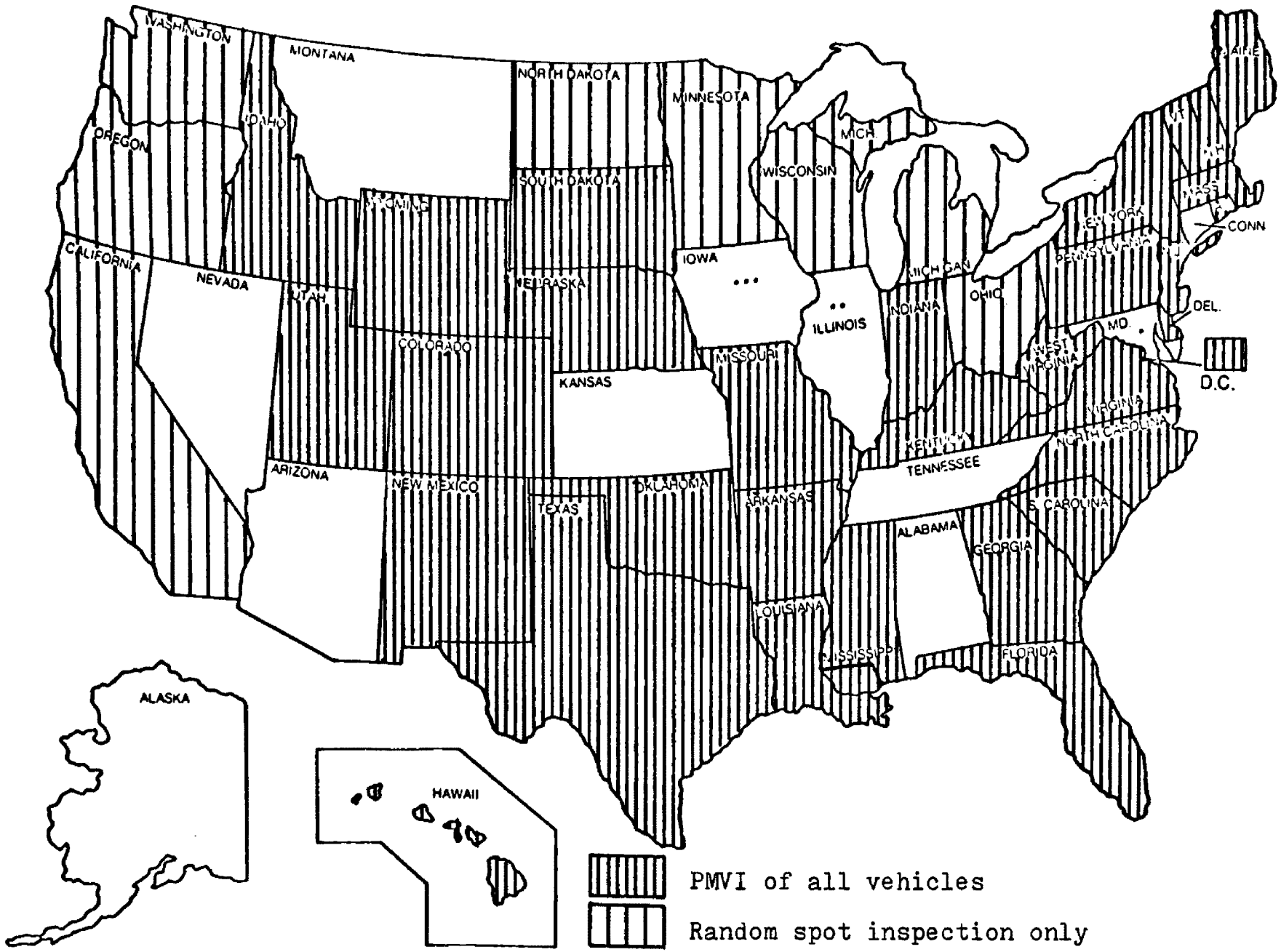
[1] Part 1: Motor Vehicle Inspection in Perspective, Motor Vehicle Inspection Reference Guide, p. 23.



* Used vehicles on transfer
** Trucks only
*** All vehicles on transfer

Fig. 4.--Map of Vehicle Inspection States

TABLE 7

PERIODIC MOTOR VEHICLE INSPECTION STATUS OF THE FIFTY STATES AND THE DISTRICT OF COLUMBIA

State	PMVI Program	Program Started	Administered By	Inspecs. Per Yr.	Inspecs. Given[a]	Cost to Motorist	Net to Station[b]
Alabama	None						
Alaska	None						
Arizona	None						
Arkansas	S.A.	1969	State Police	1	All Year	$1.75	$1.25
California	Random Spot Only	1966	Hwy. Patrol		All Year	N/C	--
Colorado	S.A.	1936	Revenue Dept.	2	All Year	1.50	1.40
Connecticut	None						
Delaware	S.O.	1933	DMV	1	All Year	--[c]	--
District of Columbia	S.O.	1939	DMV	1	All Year	3.00	--

TABLE 7--Continued

State	PMVI Program	Program Started	Administered By	Inspecs. Per Yr.	Inspecs. Given[a]	Cost to Motorist	Net to Station[b]
Florida[d]	S.A.-O.	1968	Hwy. Patrol	1	All Year	$3.00	$2.60
Georgia	S.A.	1965	Public Safety	1	All Year	3.00	2.75
Hawaii	S.A.	1967	County Police	1 or 2	All Year	3.25	3.00
Idaho	S.A.	1968	Law Enforcement Department	1	All Year	2.00	1.50
Illinois	Trucks Only		State Police	1	All Year	2.00-5.75	--
Indiana	S.A.	1969	Traffic Safety Department	1	All Year	2.50	2.00
Iowa[e]	Partial Only						
Kansas	None						
Kentucky	S.A.	1968	Public Safety	1	All Year	2.00	1.75
Louisiana	S.A.	1961	State Police	1	All Year	1.00	.75

TABLE 7--Continued

State	PMVI Program	Program Started	Administered By	Inspecs. Per Yr.	Inspecs. Given[a]	Cost to Motorist	Net to Station[b]
Maine	S.A.	1930	State Police	2	All Year	$1.00	$ .90
Maryland	Used Vehicle Only	1965	State Police	On Transfer	All Year	6.00	--
Massachusetts	S.A.	1930	DMV	2	4/1- 5/15 9/1-10/15	1.00	1.00
Michigan	Random Spot Only	1967	State Police		All Year	N/C	--
Minnesota	Random Spot Only	1968	Hwy. Patrol		All Year	N/C	--
Mississippi	S.A.	1961	Public Safety	1	All Year	2.50	2.00
Missouri	S.A.	1969	Hwy. Patrol	1	All year	2.50	2.00
Montana	None						
Nebraska	S.A.	1969	DMV	1	All Year	2.00	1.75
Nevada	None						

TABLE 7--Continued

State	PMVI Program	Program Started	Administered By	Inspecs. Per Yr.	Inspecs. Given[a]	Cost to Motorist	Net to Station[b]
New Hampshire	S.A.	1931	DMV	2	All Year	$4.00 Average	$3.85 Average
New Jersey	S.O.	1938	DMV	1	All Year	1.00	--
New Mexico	S.A.	1959	DMV	2	All Year	1.00	.90
New York	S.A.	1957	DMV	1	All Year	3.00	2.75
North Carolina	S.A.	1966	DMV	1	All Year	2.00	1.75
North Dakota	Random Spot Only		Hwy. Patrol		All Year	N/C	--
Ohio	Random Spot Only	1968	Hwy. Patrol		All Year	N/C	--
Oklahoma	S.A.	1969	Public Safety	1	All Year	2.00	1.50
Oregon	Random Spot Only	1969	DMV		All Year	N/C	--
Pennsylvania	S.A.	1929	Revenue Dept.	2	Every Quarter	4.50 Average	4.35 Average

TABLE 7--Continued

State	PMVI Program	Program Started	Administered By	Inspecs. Per Yr.	Inspecs. Given[a]	Cost to Motorist	Net to Station[b]
Rhode Island	S.A.	1959	DMV	1	5/1 - 8/1	1.00	.90
South Carolina	S.A.	1968	Hwy. Dept.	1	All Year	1.75	1.50
South Dakota	S.A.	1968	Hwy. Patrol	1	All Year	3.00	2.75
Tennessee	None						
Texas	S.A.	1951	Public Safety	1	All Year	2.00	1.50
Utah	S.A.	1936	Hwy. Patrol	1	All Year	3.25	3.00
Vermont	S.A.	1936	DMV	2	All Year	3.00 Average	3.00 Average
Virginia	S.A.	1932	State Police	2	All Year	2.00	2.00
Washington	Random Spot Only		Hwy. Patrol		All Year	N/C	--
West Virginia	S.A.	1955	Public Safety	1	All Year	3.50	3.00

TABLE 7--Continued

State	PMVI Program	Program Started	Administered By	Inspecs. Per Yr.	Inspecs. Given[a]	Cost to Motorist	Net to Station[b]
Wisconsin	Random Spot Only	1968	State Police		All Year	N/C	--
Wyoming	S.A.	1967	Revenue Dept.	1	All Year	2.00	1.75

S.A. - stations are state-appointed and supervised
S.O. - stations are state-operated and owned

[a]Most states with year-round inspection designate which month vehicle is to be inspected. Some states, as indicated, limit inspections to certain periods of the year.

[b]State charge for inspection stickers is the difference between the cost to the motorist and the net to the station.

[c]Included in registration fee.

[d]Combined system; stations are state-appointed or county-operated under state supervision.

[e]New or used cars on transfer only.

Source: Auto Dealers Traffic Safety Council, Vehicle Inspection States (Washington, D.C.: Highway Users Federation for Safety and Mobility, in cooperation with the American Association of Motor Vehicle Administrators, October, 1972), pp. 1-4.

State Appointed or Licensed System

Under a state licensed inspection system, "the state may appoint automotive service agencies (service stations, auto dealerships/garages, fleet operations, and governmental agencies) to conduct inspections under rules and regulations imposed by the state."[1] Each applicant for a motor vehicle inspection station must file an application with the agency responsible for the supervision and administration of the program. Usually this program is administered by the State Highway Patrol, the Motor Vehicle Administration, State Police, or a Public Safety Department. An investigation is then conducted to determine whether the business site meets space, manpower, and equipment requirements. In some cases, certification will involve an oral examination given to the applicants in order to determine "whether they understand the responsibilities associated with the inspection program and whether the applicant's personnel are qualified to perform the inspection program, as set forth in the rules and regulations under the state law."[2]

Since 1926, when the first compulsory periodic motor vehicle inspection law in the United States was enacted by the state of Massachusetts, twenty-nine states have enacted laws that require a state licensed inspection system.

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[1]American Association of Motor Vehicle Administrators, Periodic Motor Vehicle Inspection, A Comparative Data Analysis (Washington, D.C.: American Association of Motor Vehicle Administrators, 1971), p. 6.

[2]A Study of Motor Vehicle Inspection, April, 1967, p. 9.

Even though most of the twenty-nine states use the procedures stated above to establish stations for their statewide inspection program, "the administration, inspection, and enforcement differ, however, depending upon legislation, as developed by the individual states...utilizing this type of inspection system."[1]

Each state specifies what inspection procedure is to be implemented. After a vehicle passes the required inspection, the station issues an inspection sticker to the operator, which is placed on the windshield. The stickers vary in color and size by inspection period in order to aid enforcement officers in detecting vehicles that have failed the periodic inspection. If the vehicle is found to be in an unsafe condition, the owner is required to have repairs made and his vehicle submitted for reinspection within a designated period of time. If this is complied with and the vehicle passes the reinspection, a sticker is issued. It is imperative to know that:

> these private, licensed stations function as the service facility for the state administering the vehicle inspection program. No enforcement authority is delegated to the inspecting stations. Only law enforcement agencies have the authority to prohibit operation of a vehicle which does not meet inspection standards on the public streets and highways.[1]

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[1] Ibid.

[2] Michigan State University, East Lansing, Study Report and Plan for Periodic Vehicle Inspection for Michigan (Highway Traffic Safety Center of the Michigan State University, December, 1964), p. 7.

To insure that the private, licensed stations comply with these procedures, the supervising agency makes spot checks of the facilities and their operations. If the stations are found to pass vehicles which are unsafe or are dishonest in their operations, causing unnecessary repairs to owners, state legislation permits the revocation or suspension of the station's license. To cover the costs of supervising these private stations, income is received from the sale of the inspection stickers and/or official inspection signs to the authorized dealers.

> While state-operated stations do, to a large extent, command public confidence from the beginning, private stations do not. This confidence has to be slowly built up. It takes longer, therefore, to establish this system on a substantial basis, but when established, it is far more efficient than the state-operated system.[1]

Massachusetts' vehicle inspection program is an example of a state appointed or licensed system. Massachusetts was also the first state to require compulsory vehicle inspection (1926). By 1930, the system was completely organized and required annual inspections at licensed stations within a fifteen-day period after the vehicle had been registered. After five years, it was determined that enforcement was a complete failure and that one inspection per year was inadequate. Thereafter, two required inspections were concentrated into two separate one-month periods, one in May

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[1]Massachusetts, Registry of Motor Vehicles, Compulsory Periodic Inspection of Motor Vehicle Equipment (1967), p. 76.

and one in September, later changed to April and October. According to state officials:

> ...this system of concentrating on two short periods of one-month each, secured far better results in sustaining public interest, obtaining compliance with the law, and maintaining safety equipment in reasonably good condition. No trouble is now experienced in attaining inspection of practically 100 per cent of the motor vehicles registered....An intensive road campaign is carried on, after the inspection period is ended, by motor vehicle inspectors and state and local police. All owners or operators of cars which do not display a sticker (see Figure 5) are prosecuted in court, and as a result, within a few days after the inspection period is over, there are few cars in Massachusetts which have not been inspected....[1]

The licensed stations operate throughout the year for the purpose of inspecting second-hand cars registered between inspection periods, and for correcting equipment defects reported by inspectors or police. Currently there are approximately 3,000 stations licensed by the state and inspect over 2.5 million vehicles per year, at a cost to the individual motorist of $1.00. Teams of officials are sent to the field to make continuous inspections of station equipment, follow-up complaints, report on cars with stickers that are in unsafe conditions, and, about the middle of each inspection month, place reminder cards under the windshield wipers of cars not yet inspected for the purpose of stimulating the inspections to reduce a last minute rush to the

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[1] T. F. Creedon, Motor Vehicle Inspection: Comparative Study Between State Approved and State Operated Inspection Stations (Detroit: Automobile Manufacturers Association, July, 1963), p. 76.

stations (see Figure 5). In addition, unsafe vehicles, with or without stickers are tagged; if the owner of the vehicle does not follow up this official notice within a specified period of time, his registration is suspended without further notification. Also, if a vehicle is found to be unsafe after an inspection it is issued a rejection sticker (see Figure 5) and must be submitted for reinspection during the allotted time period.[1]

In order to carry out an effective inspection program, a valid set of regulations and standards of procedure need to be integrated within the inspection system. Most states use as their guide the standards of procedure of the American National Standards Institute. Specifically, the standards are entitled "USA Standard Inspection Procedures for Motor Vehicles, Trailers, and Semi-trailers Operated on Public Highways."

> This standard sets forth performance requirements and methods of testing, with relation to the safe operation of motor vehicles, trailers, and semi-trailers on the public highways, of those parts and equipment (braking systems, steering mechanisms, lighting systems, frames, wheels, tires, and others) the proper performance of which bears a distinct relationship to the safe operation of the motor vehicles, trailers, or semitrailers.[2]

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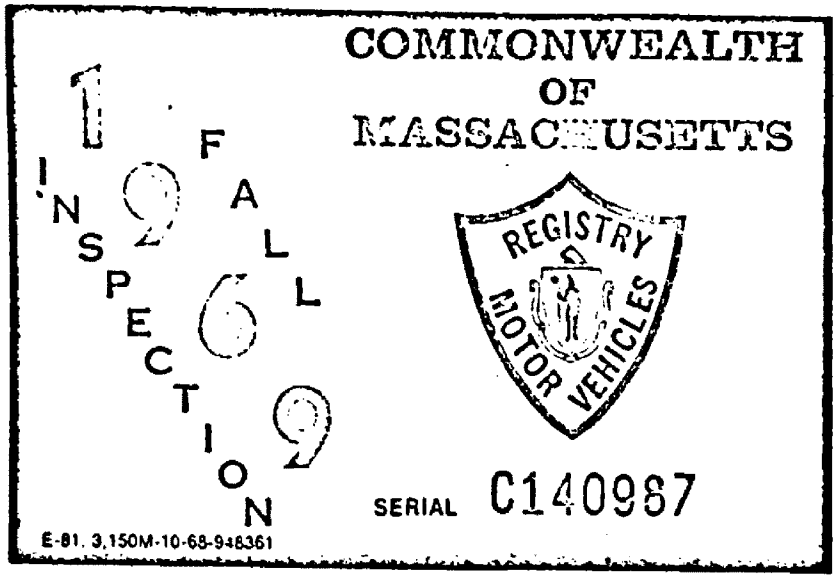
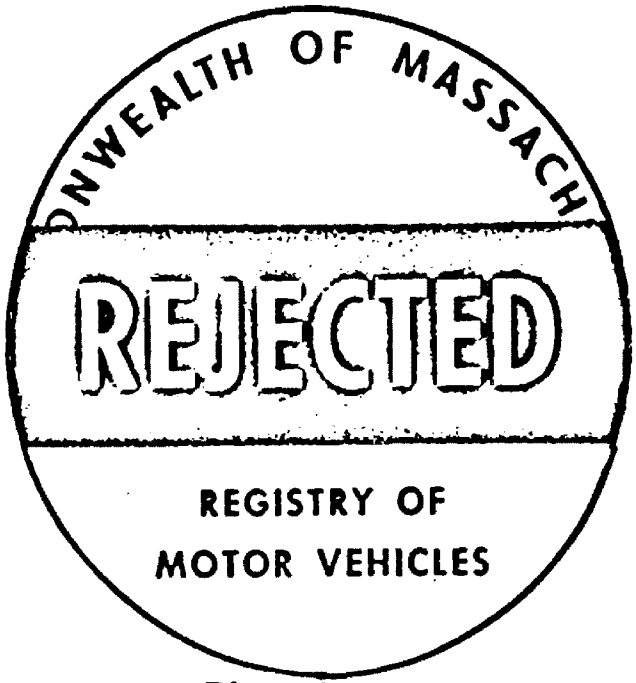
[1] Massachusetts Registry of Motor Vehicles, Compulsory Periodic Inspection of Motor Vehicles, Massachusetts System in Detail (n.d.), pp. 1-4.

[2] United States of America Standards Institute, USA Standard Inspection Procedures for Motor Vehicles, Trailers, and Semitrailers Operated on Public Highways, D7.1-1968 (New York: United States of America Standards Institute, 1968), p. 7.





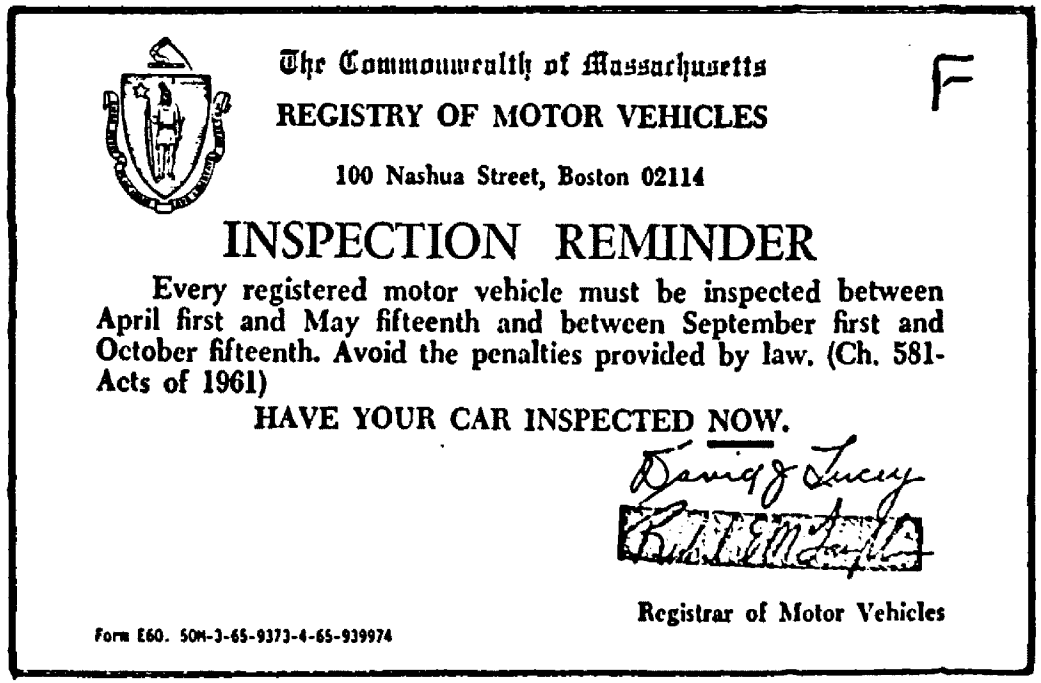


Fig. 5.--Three Stickers of the Massachusetts PMVI Program

> This standard is intended as a guide to aid the administrator in promulgating inspection standards for the operation of an inspection program to assure minimum performance requirements. It is also suggested that it be used as the minimum performance requirement to be followed by fleet owners and private passenger car owners in the constant maintenance of their vehicles at times other than when inspection is required. This standard should apply to inspection requirements for motor vehicles, trailers, and semitrailers operated on public highways.[1]

Listed below are the typical items inspected using the above standards in a state appointed or licensed inspection system:

1. Brakes
2. Headlights
3. Muffler and Exhaust System
4. Steering
5. Horn
6. Windshield
7. Rear Windows
8. Windshield Cleaners
9. Tires, Wheels, and Rims
10. Bumpers, Fenders, and External Sheet Metal
11. Auxillary Safety Equipment
12. License Plates and Registration
13. Driver's License

The state appointed or licensed inspection system has recognizable benefits and drawbacks that set it aside from other inspection systems. The following are the inherent benefits and drawbacks of this system.

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[1] USA Standard Inspection Procedures for Motor Vehicles, Trailers, and Semitrailers Operated on Public Highways, p. 7.

Benefits

1. The system is "much easier to organize, since service stations and garages are already in existence which are capable of conducting inspections with few additions of testing equipment."[1]
2. Fewer state employees are necessary since supervision is the only required job in the system.[2]
3. Because of the large number of stations which may be approved to conduct inspections, the inspection periods may be concentrated into the shortest possible time. Inspection periods of not longer than one and one-half months have been found most effective in arousing public interest and securing cooperation.[3]
4. Every motorist shares the cost of this safety service and every motorist receives the benefit of it.
5. This system is generally beneficial to states with large geographic areas and dispersed population.
6. "The selection and training of a large inspection force is eliminated."[4]

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[1] Massachusetts, Registry of Motor Vehicles, Compulsory Periodic Inspection of Motor Vehicle Equipment (1967), p. 2.

[2] Ibid.

[3] Ibid.

[4] A Study of Motor Vehicle Inspection, April, 1967, p. 12.

7. "Financial considerations and problems incident to the location, selection, and purchase of the site are eliminated."[1]

8. "Questions regarding governmental competition with private enterprise are eliminated."[2]

9. Since no statute places a limit upon the number of stations that may be licensed, it is conceivable that every area in a state will have more than adequate facilities with which to carry out inspections. This will require motorists to travel only a short distance for an inspection and wait only a short time for their inspection.

10. The costs entailed in the supervision of these private stations are usually covered by the state's income from the sale of the inspection stickers and/or official inspection signs to the authorized stations.

11. Repairs can be made at the same time the vehicle is inspected; thus avoiding the necessity of returning for a reinspection.

Drawbacks

1. A definite "lack of confidence of the public in private stations."[3]

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[1] Ibid. [2] Ibid.

[3] Massachusetts, Registry of Motor Vehicles, Compulsory Periodic Inspection of Motor Vehicle Equipment (1967), p. 2.

2. An excessive number of stations which will meet requirements and must, therefore, be approved, since no favoritism can be shown nor selection exercised if applicants meet inspection standards of equipment and personnel.[1]
3. There is difficulty in supervising so many inspection stations, and, therefore, of securing efficient and honest inspections.[2]
4. There is a temptation to find defects which lead to substantial repairs and costs to the motorist.[3]
5. Few states are satisfied that their inspection garages and stations are adequate enough at the present time.
6. Close supervision of the state is required.
7. "Embarking upon a program involving private enforcement of state laws is unsound."[4]
8. "It sets up a potential source of discrimination among repair shops at the pleasure of a state agency."[5]
9. Patronage in selection of official inspection stations can occur.
10. Lack of uniformity exists and degree of inspection varies. Equipment is less sophisticated and often times inadequate.

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[1] Ibid. [2] Ibid. [3] Ibid.

[4] A Study of Motor Vehicle Inspection, April, 1967, p. 13.

[5] Ibid.

Other Alternative Systems Licensed By the State

The problem of inspecting large fleets of motor vehicles has been handled in two ways. The first way requires all fleet owners to submit their vehicles for periodic inspection in the same manner as would any individual to the normal inspection procedures. An example of this would be the system employed by the Hertz Rent-A-Car Company in the District of Columbia. This fleet owner, with all the vehicles at his disposal, has a maintenance schedule to follow which includes a periodic inspection through the District inspection laws.

A second way to handle fleet inspection is to license the fleet owner to inspect his own vehicles. This approach accommodates the large fleet owners who would have a difficult task of presenting all their vehicles for inspection at state or private stations. The state of Ohio has used this approach to fleet inspection over the last few years with much success.

For truck inspection, this fleet program is most advantageous to the owners who must also comply with other state requirements, i.e., Interstate Safety Standards, which normally require more rigorous testing. Moreover, the lane inspection of large trucks and other heavy vehicles requires special equipment to do an adequate job of inspection. In a state licensed inspection system, fleet inspection of trucks would be a necessity.

With a state fleet inspection program, the state would still require supervisory personnel to make periodic checks on fleet owners to insure that procedures and standards were followed. An appropriate fee might be charged to cover the administrative costs to the state. The inherent benefits of the fleet inspection are best described by a West German Fleet Owners Association (DEKRA-Deutscher Kraftfahezeug-Uberwachungs-Verein E. V.), "vehicles are better maintained, and, therefore, are largely free of defects and, as a consequence, are presumed less likely to be in crashes attributed to defects."[1]

Private Contract for Periodic Motor Vehicle Inspection

Several private organizations offer periodic motor vehicle inspection program services to the state on a contract basis. Their proposals normally include the construction, equipment implementation, and operation of inspection stations in accordance with the National Highway Traffic Safety Administration and state standards (see Figure 6). The contract arrangements are for either five- or ten-year leases accompanied by provisions for ownership of buildings

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R. Moll and E. Halbgewachs, Success and Recognition of the Voluntary Vehicle Inspection Program in the Federal Republic of Germany, quoted in Robert Brenner and others, State of the Art--Motor Vehicle Inspection (Washington, D.C.: U.S., Department of Transportation, National Highway Safety Bureau, 1971), p. 384.

and equipment by the state at the expiration of the lease. The private organization provides their own managerial manpower and necessary training for inspection personnel hired from the area. Liaison coordination for communication purposes between state authorities and the inspection stations is also furnished.[1]

Ordinarily, the state must provide suitable sites clear of manmade structures; permits and licenses for construction; empowering legislation to permit issuance of a contract of periodic motor vehicle inspection services; and program supervision and monitoring services. The private organization will normally retain a certain percentage of the inspection fee and render the remainder to the state. This method of instituting a periodic motor vehicle inspection program is suitable to a state that is not financially capable of investing in facilities, but nevertheless wants a PMVI program.[2]

An example of such a program is the Government Services branch of the RCA Service Company, Camden, New Jersey. At this time no state has initiated such a program, however, Arizona has shown some interest in the program, but, as of yet, has not implemented any actions in this direction.

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[1]RCA Service Company, A Design for Periodic Motor Vehicle Inspection (Camden: RCA Service Company, Government Services Branch, 1971), pp. 1-9.

[2]RCA Service Company, A Design for Periodic Motor Vehicle Inspection, pp. 1-9.

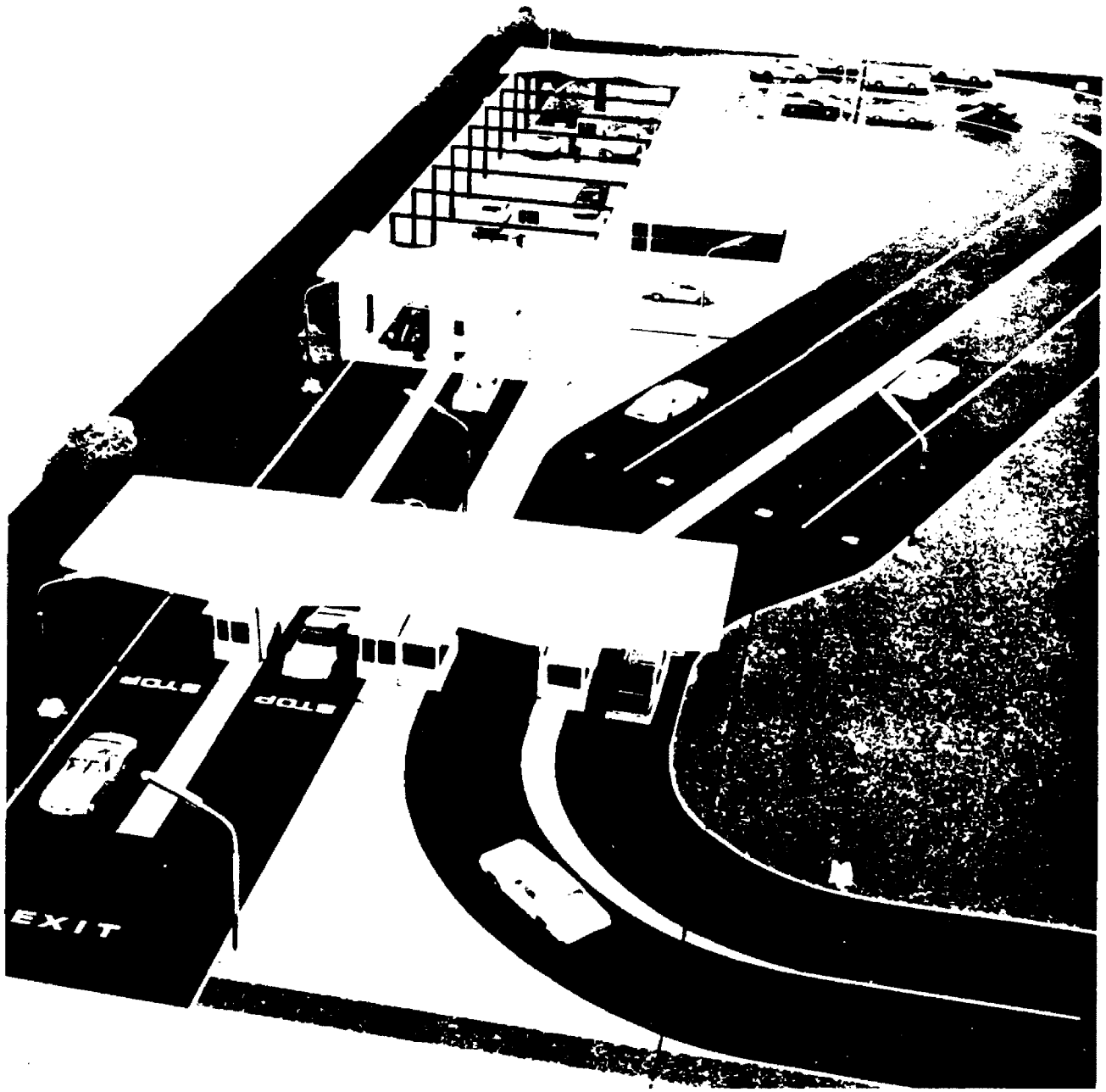

Fig. 6.--Typical Inspection Station set up by RCA.

The following benefits and drawbacks are listed below. Even though this system has yet to become operational in any state, hypothetical pros and cons can still be weighed against each other.

Benefits

1. The system is adaptable to a state that is not financially capable or willing to invest large sums of capital into facilities, personnel training, supervision, but nevertheless wants a periodic motor vehicle inspection program.
2. It is an "unbiased program conducted by an independent contractor who has no vested interest in automobile manufacturing, repair parts, or repair services."[1]
3. The private contractor provides uniform and standardized inspection for all specified vehicles regardless of the geographical location within the state.[2]
4. "The program does not require the extensive use of highly skilled automotive mechanics as inspectors."[3]
5. The hiring of personnel, as much as possible, will be from within the state.[4]
6. "The program is self-supporting and can be a revenue producer for the state."[5]

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[1] RCA Service Company, A Design for Periodic Motor Vehicle Inspection, p. 1.

[2] Ibid.

[3] Ibid.

[4] Ibid.

[5] Ibid., p. 2.

7. The program system supposedly provides a high degree of uniformity of inspection.
8. Optimum usage and future expansion can be planned in advance since inspection buildings can be built to correspond with the density of current and projected car registrations in specific localities.
9. The use of mobile units is an economical way to service areas with sparse population and requires less driving distance for the motorist.

Drawbacks

1. An obstacle to implementation of this program is obtaining proper empowering legislation to permit issuance of the five- or ten-year contract required by the private organization.
2. No state has adopted this type of inspection system to this date, thus, an unproven system. No proven experience of effectiveness.
3. It causes an inconvenience to the motorist due to the small number of stations available (even though mobile units are available) causing increased driving and waiting time.
4. If mobile units are used (which would be the case for Montana due to large land area and sparse population) the degree of effectiveness and standardization could be possibly lessened.

5. Repairs have to be made elsewhere after a rejection by the facility and must be returned for reinspection.
6. A lengthy implementation time is required.
7. The use of mobile units in sparsely populated areas causes inconvenience to the motorists because they have no choice in determining when and where their vehicles are to be inspected.
8. Because of the comparatively small number of inspection stations which can be established under this system, inspection periods must be prolonged, even to the extent of continuing throughout the entire year.
9. There is no supervision by state officials because supervision is controlled and set up by the contracting company.

State-Owned and Operated System

Under a state-owned and operated system, the state government controls and supervises the complete inspection program. All the inspections are conducted by civil service personnel who are trained by the state. All the stations are owned or leased by the state.

> The items inspected are generally the same as those in the state-appointed system, however, the equipment used for inspection purposes is sometimes different, due to the difference in the basic function and layout of the facility where the inspection is being performed.[1]

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 10.

> This set-up permits the stations to operate on an 'assembly line' basis with several inspectors each doing a portion of the inspection as the vehicle passes through the lane.[1]

A complete and accurate inspection is facilitated by the use of personnel who repetitively inspect the same pieces of equipment using specialized tools and equipment. Usually the inspection requires only a few minutes for a complete and thorough investigation. At state-owned and operated stations, inspection of vehicles is the main objective. All repairs and adjustments that are required are made elsewhere, followed by the return of the vehicle for re-inspection. When the vehicle passes inspection, windshield stickers are issued certifying that the vehicle complied with the safety standards of the state-owned station.

Even though this system requires an initially high cost outlay for facilities and the continuing costs for large numbers of personnel to run the program, a state-owned and operated system does bring about a high degree of uniformity of inspection. It provides simplified control measures over its operations along with an unbiased staff to perform the inspections and collect pertinent data in an efficient manner (see Figure 7). This system has been found to accommodate states of small geographic area and dense population. Optimum usage and future expansion can be planned in advance since inspection buildings can be built to correspond with the density of current and projected car registrations in

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[1] Ibid., p. 5.

specific localities. New Jersey, Delaware, and the District of Columbia are presently the only states employing a state-owned and operated inspection system (see Figure 8).

Established in 1908, New Jersey's inspection system is the largest state-owned and operated program in the country to date. Their Periodic Motor Vehicle Inspection statute, inacted in 1936, has resulted in the building of forty-one inspection centers with a total of seventy lanes (twenty-four centers having one lane, seven having two lanes, eight having three lanes, and only two having four lanes). With a capacity to examine an estimated 7.75 million vehicles per year (assuming forty vehicles per lane hour), department officials calculate that in 1968, 5.35 million inspections were performed on approximately 3.7 million vehicles.[1]

When considering the feasibility of state-owned and operated motor vehicle inspection systems, questions frequently arise concerning the convenience of such a program to the motor vehicle owners. The New Jersey experience provides a good guideline for determining the size and location of the inspection stations to be built. Both of these factors have an impact on the time a motor vehicle owner spends to have his car inspected. According to a study

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[1]New Jersey, Report on the Motor Vehicle Inspection Program and its Relationship to Highway Safety, pp. 1-7.

completed in June, 1970, by a private consulting firm, geographic distribution of the inspection stations "corresponds to a driving distance of approximately thirty miles. This distance occurs only in a sparsely populated area, however, and few people have to drive more than twenty miles to reach a station."[1] The feeling of the general public is that the inspection system is reliable and effective and seems to outweigh any inconvenience that this traveling distance might create.

The State of Delaware also utilizes a state-owned and operated inspection system. It has been in operation since 1933. Prior to 1940, when Delaware built its first permanent station, mobile equipment was used to inspect motor vehicles at publicly announced locations on a regular schedule. Presently, Delaware has an inspection station in each of their three counties and a fourth one near Wilmington, a large population density area. These four stations, three of which have two lanes each and one with four lanes, service a motor vehicle population of approximately 350,000 vehicles.[2]

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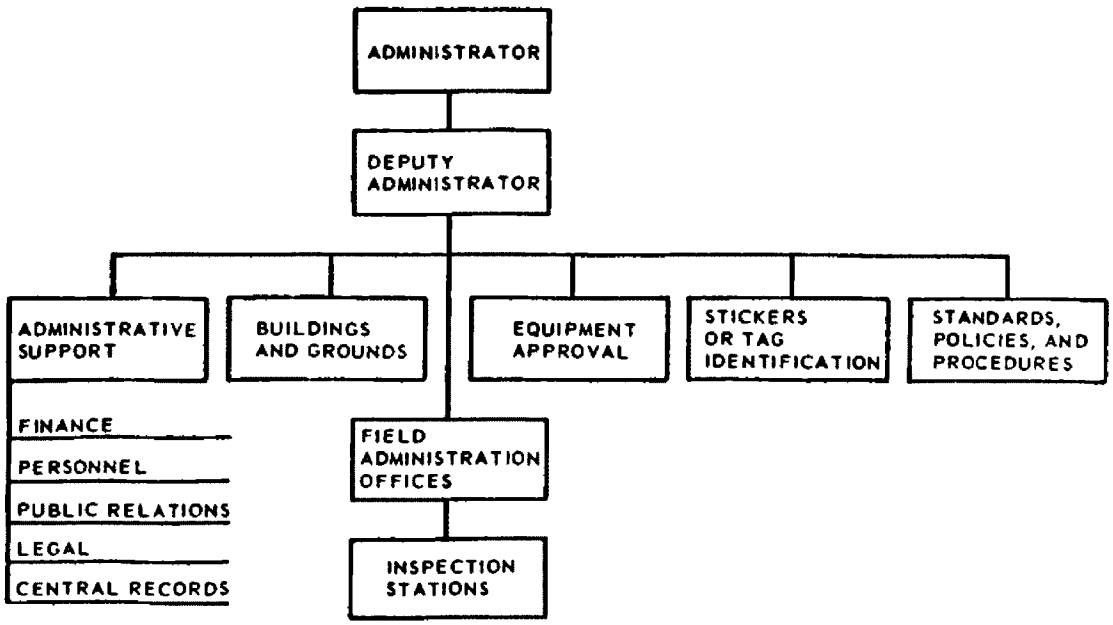
[1]Operations Research, Inc., An Evaluation of the New Jersey Motor Vehicle Inspection System, (prepared for the Division of Motor Vehicles, Department of Law and Public Safety by Operations Research, Inc., 1970), p. 35.

[2]Letter from Robert J. Voshell, Chief, Vehicle Services, Department of Public Safety, Dover, Delaware, November 1, 1972.



Source: National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 277.

Fig. 7.--Organizational Chart

Source: New Jersey, Department of Law and Public Safety, Division of Motor Vehicles, Report on the Motor Vehicle Inspection Program and Its Relationship to Highway Safety (September, 1969), pp. 1-7.

Fig. 8.--State-owned and operated inspection facility in the state of New Jersey.

Delaware's inspection system is unique in that vehicle registration, driver licensing, and motor vehicle inspection are consolidated within one operating facility. With this physical arrangement, an individual car can be serviced for several different functions. The costs for an annual inspection are included in the $20 vehicle registration fee. Just within the past two years, Delaware's inspection procedures and standards have been updated with the current Vehicle Inspection Handbook issued by the American Manufacturers Association.

Many state inspection programs have adopted the Vehicle Inspection Handbook as a guide in standardizing inspection procedures. Basically the Handbook is

> ...a loose-leaf handbook, interpretative of the ANSI Standard D7.1 (formerly USASI) on motor vehicle inspection requirements and responsive changes in vehicle design significant to motor vehicle inspection programs. It provides succinct descriptions of inspection procedures and objective statements of cause for rejection. The current edition is not intended as a set of hard and fast rules, but as a guide for both the individual inspection and for the person responsible for planning and implementing a meaningful inspection program based on sound engineering principles. All or any part of the book may be used, or various parts may be absorbed into a program in stages.[1]

Included in this paper is a page taken from the Vehicle Inspection Handbook (see Figure 9) showing the recommended procedure, equipment, driver advice, and cause for rejection of the vehicle being inspected.

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[1]Automobile Manufacturers Association, Vehicle Inspection Handbook for Passenger Cars, Trucks and Buses, Motorcycles, School Buses, Foreign Vehicles, Through 1972 Models (Detroit: prepared by Automobile Manufacturers Association, Inc., in cooperation with the American Association of Motor Vehicle Administrators, February, 1972), p. ii.

SECTION IV - BRAKES

It is recommended that at least one front and one rear wheel be removed for complete brake inspection. ALWAYS inspect a brake assembly which shows evidence of throwing fluid or grease.

HYDRAULIC SYSTEM

PROCEDURE	EQUIPMENT	ADVISE DRIVER	REJECT VEHICLE
HYDRAULIC SYSTEM - Visually inspect condition of hydraulic system. - Inspect wheel cylinders for leakage. - Inspect hydraulic hoses and tubes for leaks, cracks, chafing, flattened or restricted sections, and improper support. - Inspect master cylinder for leakage and fluid level.	- Steel scale	If fluid level in master cylinder is more than 1/2 inch below top of reservoir, brake system should be checked for possible leakage.	If: - Wheel cylinders leak. - Hoses or tubing leak, or are cracked, chafed, flattened, restricted or are insecurely fastened. If: - Master cylinder leaks. - The fluid level is more than 3/4 inch below top of reservoir.
DUAL HYDRAULIC CIRCUITS - In addition to the above -- if vehicle is equipped with a brake warning light: - Test for operation of light. - With ignition switch on, apply 40-60 pounds of pedal force (15-20 pounds for power assisted brakes), and observe light. - Examine both sections of reservoir.			- If light is burned out. - If light comes on when brake pedal is depressed. - If either level is more than 3/4 inch below top.

Fig. 9.--Vehicle Inspection Handbook Checklist.

Listed below are the benefits and drawbacks related to a state-owned and operated inspection system.

Benefits

1. "The inspection program can be more easily and effectively supervised and controlled and assures a uniform inspection of all vehicles."[1]
2. It provides opportunities for other official activities relating to drivers (i.e., licensing, registration, fines, check recalled vehicles, stolen vehicles).[2]
3. "It reduces improper inspection practices for the purposes of commercial gain."[3]
4. Because the selection of appointed garages is eliminated in this system, patronage and other problems relating to this are non-existent.
5. "It induces inspectors to give primary attention to equipment affecting safety rather than that which can involve a substantial expenditure for repair."[4]
6. It provides a quick and accurate examination facilitated by the use of personnel who perform specific acts repetitively with specialized equipment.
7. This system has been found most useful in densely populated states of small geographic area where inspection centers may be used to capacity throughout most of the year.

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 12. [2] Ibid. [3] Ibid. [4] Ibid.

8. Optimum usage and future expansion can be planned in advance since inspection buildings can be built to correspond with the density of current and projected vehicle registrations in specific localities.
9. This system requires a stricter, more effective control over inspectors and provides a more accurate and complete collection of motor vehicle data.
10. Statistics compiled by the National Safety Council establish the important fact that for the year 1961, states having state-owned and operated vehicle testing stations have the lowest mileage death rate, 2.83 fatalities per 100 million miles of travel (state licensed--4.74; limited inspection--4.50; no motor vehicle inspection required states--6.07).[1]

Drawbacks

1. "The permanent, in-place stations have proven satisfactory and economical only in a limited number of states having high motor vehicle registration densities."[2]
2. Only a small number of in-place permanent stations would be available because of the cost of construction, equipment, and maintenance.[3]
3. "It is an encroachment on private enterprise and an imposition of a government set-up at taxpayer's expense."[4]

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[1] [1]Operations Research, Inc., An Evaluation of the New Jersey Motor Vehicle Inspection System, p. 19.

[2]A Study of Motor Vehicle Inspection, April, 1967 p. 14.

[3]Ibid.

[4]Ibid.

4. Increased driving and waiting time result due to the limited number of stations available.
5. Repairs must be made elsewhere and vehicles returned for reinspection.
6. A large force of inspectors must be trained, supervised, and evaluated.
7. Lengthy and costly implementation time for the system is encountered.
8. "Because of the comparatively small number of inspection stations which can be established under the system, inspection periods must be prolonged, even to the extent of continuing throughout the entire year. Probably no such system will ever be successful because of the difficulty of sustaining public interest after the initial splurge of publicity is over and the novelty has worn off."[1]

Other Alternative Systems Owned and Operated by the State

Another form of the state-owned and operated system is the roadside random inspection (also referred to as random spot check inspection).

> This program provides that every driver of a passenger vehicle shall stop and submit the vehicle to an inspection of its mechanical condition and equipment at any roadside location where...Highway Patrol is conducting tests and inspections of passenger vehicles and where signs are displayed requiring such stops.[2]

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[1] Massachusetts, Registry of Motor Vehicles, Compulsory Periodic Inspection of Motor Vehicle Equipment (1967), p. 2.

[2] A Study of Motor Vehicle Inspection, April, 1967, p. 10.

Currently eight states employ this type of inspection system (California, Michigan, Minnesota, North Dakota, Ohio, Oregon, Washington, and Wisconsin) to assure the safety of automobiles in their jurisdictions. Cars are selected on a random basis to stop for inspection wherever tests and inspections are being conducted, with inspection locations frequently changed. For this reason, an individual never knows when he will be stopped; it is felt that this fact will assure year round owner concern for vehicle maintenance rather than once or twice a year before mandatory periodic checks.

> The laws of two of these states--Washington and Wisconsin--provide for conversion of the random system into a program requiring periodic inspection. The Washington statute already contains references to 'periodic inspection' but, in practice, a random system has been developed pursuant to its provisions. The Wisconsin law contains a specific reference to a voluntary periodic program to be established under a pilot study in order to determine the practicability of a compulsory periodic program for the future.[1]

While the effectiveness of a random inspection system has not fully been determined, possibly the experiences of California and Wisconsin may be helpful in evaluating this alternative inspection system.

California

In 1965, California passed a bill that established a random spot-check inspection system. The California Highway Patrol conducts the inspections utilizing approximately 300 men in 60 locations working within cities and

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 28.

unincorporated areas. The five-man teams check equipment, mechanical condition, compliance with pollution and noise standards, and an over-all external inspection of the vehicle. The inspection lasts an average of five minutes in length. No dismantling of the vehicle or removal of parts is done by an inspection team. "Items checked are mirrors, horn, windshield wipers, glass and glazing, wheels and tires, mufflers and exhaust systems, service and parking brakes, steering, lights, and smog control devices. The inspection process also includes a driver's license and registration check."[1]

The California Highway Patrol estimates that approximately 1.6 million vehicles (16 per cent of the registered vehicles) are inspected per year with an additional 2.5 million given repair warnings after being stopped for a violation. The basic reasons for initiating a random spot-check system in California were to effectively inspect a widely dispersed vehicle population of 12 million cars and do it with the minimum amount of cost and manpower. Supervision of a state-owned or appointed program would run at least $50 million at the outset, while a random spot-check inspection system would cost about $4.5 million per year to the state.[2]

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[1] California Highway Patrolman, Volume 31, No. 1, March, 1967, p. 9.

[2] H. A. Duryea, "A Report: Random Motor Vehicle Inspection in California," Traffic Digest and Review, May, 1968, p. 5.

Wisconsin

Wisconsin's random spot inspection system is composed of eighteen inspection teams with each team made up of one traffic officer and two motor vehicle inspectors. Each state patrol district has at least two inspection teams at its disposal. Each vehicle inspected is checked to insure that the following equipment is safe: "Brakes, lights, turn signals, steering, horns and warning devices, glass, mirrors, exhaust system, windshield wipers, tires, and other items of equipment designated by the administrator of motor vehicles."[1]

After an inspection sticker is issued it exempts the vehicle from further inspections for a period of one year. The laws of Wisconsin provide for conversion of the random system into a program requiring periodic inspection for all vehicles. Also, it contains a specific reference to a voluntary periodic inspection program to be established under a pilot study in order to determine the practicability of a compulsory periodic program for the future.[2]

According to D. Van Gorden, in his report entitled "A Suggested Trial Substitute Periodic Motor Vehicle Inspection Program,"

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 254.

[2]Ibid., p. 28.

> Wisconsin conducts a random spot inspection program which does not meet the requirements of the National Highway Safety Bureau Standard No. 1--Periodic Motor Vehicle Inspection. A study by the Wisconsin State Department of Motor Vehicles made during the last half of 1968 concluded that their spot program not only did not meet the standard, but was not an effective program in achieving the purpose of the standard--adequate vehicle maintenance so that all vehicles registered in the state would be properly equipped and maintained in reasonably safe working order.[1]

This pilot study would require that each vehicle owner inspect his own vehicle (or hire someone else to) upon registering his vehicle and at six-month intervals thereafter, and be able to verify to the state that the vehicle meets state laws relating to ownership, equipment, and maintenance. To enforce this program the state will continue to perform the random spot-check inspection as before. A program such as this, has only been initiated once before (California) and is designed to do several things: provide a program that will meet the NHSB standard; provide for proper maintenance of vehicles; educate the public on maintenance procedures; be less expensive to the vehicle owners; lessen the potential corrupt practices encountered when a mechanic or garage owner works on a vehicle; and provide for record systems and evaluation programs.[2]

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[1]D. Van Gorden, A Suggested Trial Substitute Periodic Motor Vehicle Inspection Program, quoted in Robert Brenner and others, State of the Art--Motor Vehicle Inspection (Washington, D.C.: U.S., Department of Transportation, National Highway Safety Bureau, 1971), p. 387.

[2]Van Gorden, A Suggested Trial Substitute PMVI Program, p. 387.

The random inspection system seems to be a satisfactory option for large states with dispersed populations, that face financial burdens and enforcement problems. A concluding factor might be that random inspection would best serve as a check on the efficiency and operation of a PMVI program rather than a substitute for it.

The benefits and drawbacks of a random inspection system are listed below.

Benefits

1. Advantageous for large states with dispersed populations which face other financial burdens and difficult enforcement problems.
2. Beneficial to citizens of the state since there is usually no fee assessed for the random inspection.
3. Creates year-round concern by individuals for safety of their vehicles rather than once or twice a year before mandatory periodic inspections common to a state-owned or licensed system.
4. Less manpower is required to supervise and administer the inspection program. State Highway Patrols usually administer the program.
5. Cost to initiate and maintain a random inspection program is less than that of a state-owned or appointed program.[1]
6. Inspectors are impartial due to the fact that no vested interest is at stake.

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[1]Duryea, A Report: Random Motor Vehicle Inspection in California, p. 5.

Drawbacks

1. An inconvenience to the motorists because random inspections can occur at anytime and the individual never knows when he will be stopped for an inspection.
2. The quality of the inspection is low compared to other systems because of the brief external type of inspection.
3. "It is an encroachment on private enterprise and imposition of a government set-up at taxpayers expense."[1]
4. Possibility exists of missing the same vehicle year after year, thus allowing many unsafe, uninspected vehicles on the state highways. Duplication of inspection is possible leaving some vehicles with no inspection.
5. System is not as effective as needed and would best serve as an enforcement for an already established periodic motor vehicle inspection.

Mobile Inspection System

Mobile inspection units have been built by the RCA Service Company under a study grant from the National Highway Traffic Administration of the Department of Transportation.

> In contracting to provide the state with the services of an RCA designed PMVI program, RCA commits itself to provide all facilities, equipment, and management and inspection personnel necessary to render total system services statewide.[2]

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 14.

[2] RCA Service Company, A Design for Periodic Motor Vehicle Inspection, p. 2.

The RCA program is two-fold in nature in that it offers a mobile inspection unit system along with the permanent inspection station system (described earlier under Private Contract for Periodic Motor Vehicle Inspection). The mobile units are used in areas of the state with low population densities in which permanent inspection stations are not economically feasible. It is an effective means to close critical gaps in state inspection programs in that it "could inspect all the cars within a fifty-mile radius in a few days, then move to another area."[1]

The mobile facility is self-contained and can operate in any location (including asphalt, concrete, or hard-packed surfaces), however, the unit is dependent on weather conditions and can only be operated efficiently when the weather is favorable to outside inspection. When operated with a five-man crew and one supervisor, the equipment can be unloaded and set up in forty minutes (see Figure 10). Capacity of the mobile unit is fifteen vehicles per hour, with each individual operation running approximately sixteen minutes. Based on this rate, cost per vehicle would run approximately $2.50 (including all capitalization and operating costs).[2]

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[1] "NHSB Unveils Mobile Inspection Facility." The Federal Reporter, October, 1970, p. 6.

[2] Letter from Norman Rosenthal, Marketing Manager, RCA Service Company, December 18, 1972.

Source: Photo enclosed with information from the RCA Service Company.

Fig. 10.--RCA Mobile Inspection Unit

The mobile units, like the permanent in-place facilities, provide the following inspections:

1. front end alignment
2. headlight aim and intensity
3. front suspension and steering integrity
4. exhaust emission tests
5. brake performance
6. peripheral equipment
7. vehicle registration, licensing, and license plate mounting.[1]

At this time, no states have employed a mobile inspection system. Since none are in existence, it is difficult to evaluate or substantiate whether or not the system could be an effective tool for vehicle inspection. In determining benefits and drawbacks for the system, only speculation and hypothetical examples can be used to draw out pertinent points under each heading.

Benefits

1. Would serve areas of a state where there is low population density in which permanent inspection stations are not economically feasible.
2. It would close critical gaps in already established inspection programs or reduce workloads of existing stations.
3. Facility is self-contained and can operate in any location (asphalt, concrete, or hard-packed surfaces).
4. "The inspection is conducted by an independent contractor (i.e., RCA) who has no vested interest in automobile manufacturing, repair parts, or repair services."[2]

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[1]RCA Service Company, A Design for Periodic Motor Vehicle Inspection, p. 8.

[2]Ibid., p. 1.

5. Initiation of the program requires little or no investment by the state.
6. The program is self-supporting and a money making highway safety producer for the state.

Drawbacks

1. No program to date has been used, therefore, nothing available to substantiate whether or not the system is effective.
2. Weather conditions play a vital role in the mobile unit's effectiveness and limits the number of days per year that it could be used.
3. The management of the mobile units require a considerable amount of coordination and publicity in order to inform the citizens in the area that the mobile facility is there and open for operation.
4. If a motorist misses an inspection opportunity while the mobile unit is in his area, he may have to drive a considerable distance to secure his annual inspection.
5. Supervision and enforcement of inspection seem to be difficult to control and manage.
6. Repairs for inspection failures need to be accomplished elsewhere and vehicles must then be reinspected. Presents a problem in that a time limitation is imposed on the motorist to have his vehicle repaired while the mobile unit is in the area.
7. Uniformity of inspection would possibly be degraded due to mobilization.

Combination System

This system would draw benefits from each of the aforementioned inspection systems (state appointed and state owned). Thus, state operated stations would be set up in cities and areas of high population density and state appointed stations or mobile units would be used in areas of low population density.[1] This type inspection system has been considered by states from time to time, but, as of yet, no state has employed this type of operation.

> An important factor in considering a combination system is the fact that the state would be required to adjust its administrative and supervisory procedures to accommodate two separate MVI systems, rather than one. Constant vigilance would be required to assure motorists effecient and uniform inspections in all areas of the state.[2]

> No one can be much impressed with the idea of an inspection system using both state-operated and private inspection stations. The only reason that could lead to its adoption would be the failure of the state-operated stations to accomplish successfully the inspection work, especially outside of the cities, without the use of the admittedly unsatisfactory portable lanes. It seems certain that such a system would have the disadvantages of each and, in addition, would just about double the problems and cost of administration and supervision. A combination of municipally-operated inspection stations and private stations probably would be better. In such a case, all stations, municipal as well as private, should be subject to the approval and supervision of state authorities.[3]

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 275.

[2]Part 1: Motor Vehicle Inspection in Perspective, Motor Vehicle Inspection Reference Guide, p. 16.

[3]Massachusetts, Registry of Motor Vehicles, Compulsory Periodic Inspection of Motor Vehicle Equipment (1967), p. 3.

Another possible combination is the state appointed system and the mobile unit system. Operation of the state appointed system stations would be set up in the higher populated areas and communities. The mobile units would canvas the sparsely populated areas and be available to people located great distances from large cities (i.e., farmers, ranchers, small communities). This type of system would alleviate the problems incurred by combining a state owned and a state appointed system.

The inspection program adopted by the RCA Corporation where permanent in-place stations are combined with mobile units, could actually be considered a combination system. Again, all the benefits, drawbacks, and characteristics of each system separately would be present in the combination.

Diagnostic Inspection System

> It is generally accepted that the proper maintenance of a vehicle requires the expenditure of certain sums of money. These costs can be, and in many instances are, greatly increased by money spent unnecessarily on repairs and spare parts because of improper diagnosis on the part of inspection and maintenance personnel.[1]

For this reason, the diagnostic inspection system was developed in 1962 by the Mobil Repair Center, Inc., to rid the American motorist of the previous "guess work" method used in inspecting their vehicles. Since the opening of the first

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 31.

diagnostic lane by Mobil, several other major oil companies, automobile dealers, tire companies, and independent service shops have opened up diagnostic inspection systems across the country.

Basically, the diagnostic inspection system is an organized method of testing, checking, and analyzing every safety and performance factor of a motor vehicle. It is conducted using the most sophisticated equipment available and employs the use of dynamic equipment and testing methods, instead of testing under static conditions. Most inspections conducted today during a PMVI employ testing a stationary vehicle under static conditions. This practice can only predict minutely what the vehicle's performance will be on the open road. The dynamic testing system provides greater analysis and evaluation to give the motorist testing results under "real" conditions. For example, to test braking performance, the front wheels are placed on two rollers of a dynamometer. "A dynamometer measures braking performance, the power transmitted to the highway at the wheels, wheel alignment, vibration, etc."[1] Then the diagnostician attaches leads of several electronic instruments to the engine and other parts of the vehicle to measure engine performance. This same test also helps "locate vibrations which can cause rapid tire wear, degrade the roadability of the vehicle, or which could ultimately lead to lubrication breakdown and

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 32.

metal fatigue--resulting in either failure of a component or an extensive repair."[1] The car is then repositioned on the rollers and the same tests are performed on the other set of brakes. A discerning diagnostician will learn a great deal from these tests and will expose malfunctions by simulating operating conditions and then determine if the particular pieces of equipment are in serviceable condition for future use.

A typical diagnostic inspection center will conduct over 100 tests on a vehicle. Most of these tests are related to the safety of the vehicle's operation. In addition to the standard background information on the vehicle and driver, a typical diagnostic center check list has over 100 items grouped under four phases of the inspection (see Figure 11).

> Each test is coded in three classifications--standard, substandard, or critical. An item that checks out as substandard but which is being operated under favorable or ideal conditions may not warrant immediate adjustment or replacement. A part tested critical and one which would affect the safe operation of the vehicle might require immediate repair or replacement.[2]

At present, most diagnostic inspection centers are run by private firms and usually have a direct economic interest in finding faulty parts in a vehicle. This stiuation usually results in the general public feeling that the diagnostic centers are concerned with only generating profits rather than promoting motor vehicle safety. So far as can be learned, no state employs diagnostic inspection equipment

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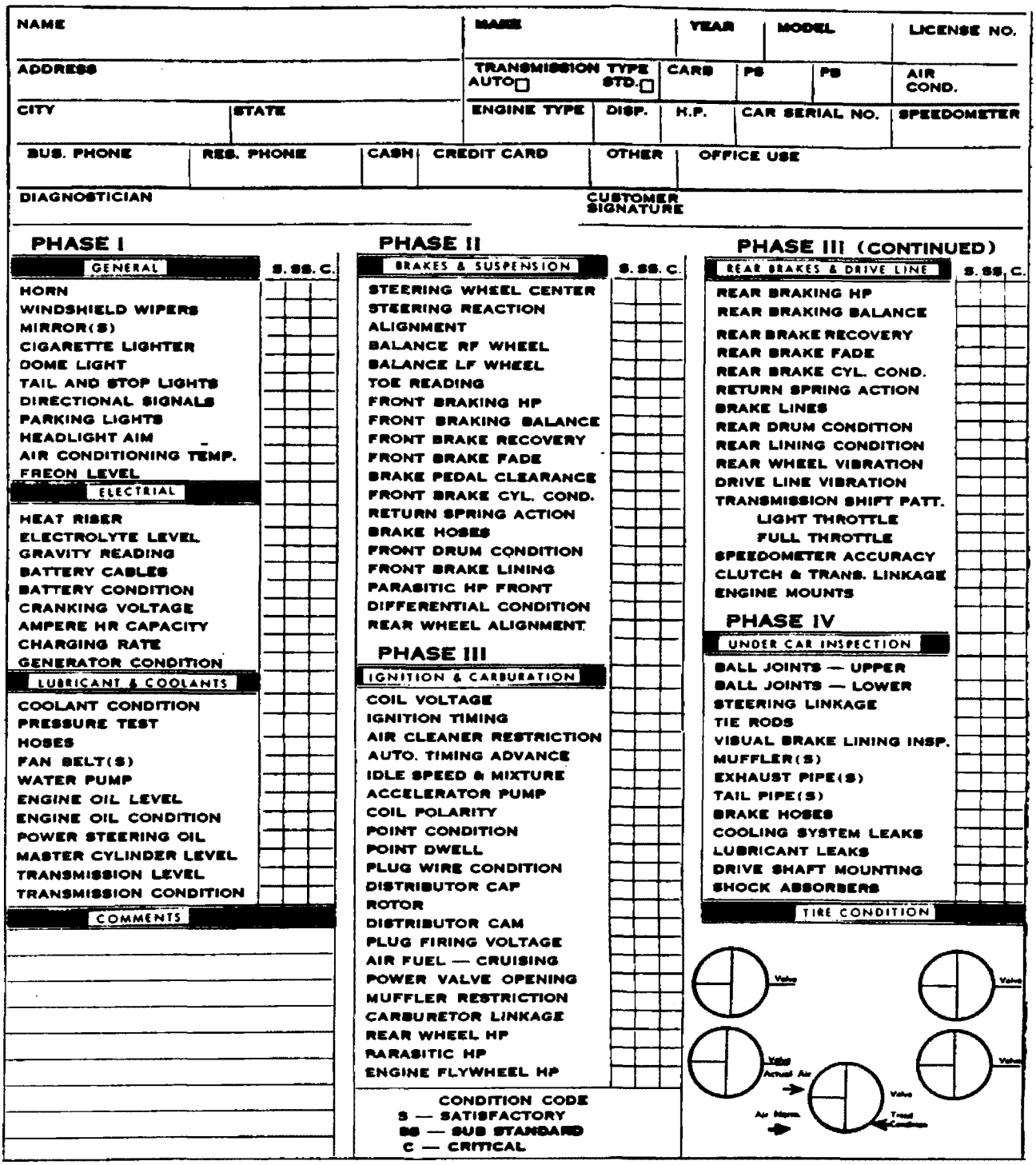
[1] Ibid., p. 34 [2] Ibid., p. 32.

in its periodic motor vehicle safety inspection programs. However, in the future, diagnostic testing will play an important role in state inspection programs by restoring confidence in automobile service, providing better evaluation and analysis of the vehicle, and encouraging preventive maintenance to avoid costly future repairs.

Benefits

1. Affords greater analysis and evaluation under "real" conditions.
2. The results obtained from the diagnostic system may encourage owner preventive maintenance practices to avoid costly future repairs.
3. Reduces the possibility of improper diagnosis, thus reducing owner costs due to unnecessary repairs due to faulty analysis from biased inspection systems.
4. Biased diagnosis is eliminated provided the program is run by the state or federal agency.
5. Uniformity of inspection is quite high since each vehicle receives the same comprehensive battery of tests.
6. The program can be self-supporting and produce revenue for the state.
7. The program can be easily and effectively supervised.
8. An accurate and complete collection of data is available.
9. The diagnostic inspection creates greater confidence of the motorist in the honesty and efficiency of the system.
10. Reinspection of rejected vehicles provides a check on the quality of repairs received.



Source: A Study of Motor Vehicle Inspection, April, 1967, p. 33.

Fig. 11.--Diagnostic Inspection Checklist

Drawbacks

1. The system is extremely costly.
2. Training of qualified personnel would be costly and difficulty in maintaining an adequate crew force would occur.
3. No state has adopted this type of system on a part-time or full-time basis, thus, an unproven system for periodic motor vehicle inspection.
4. Repairs diagnosed must be made elsewhere and vehicle returned for reinspection.
5. Lengthy implementation time is required for operational status.
6. Because of the comparatively small number of diagnostic lanes which could be established (due to cost) inspection periods would have to be prolonged, even to the extent of continuing throughout the entire year.
7. Because of the small number of stations that could be established long distances of travel would be required by motorists to reach diagnostic centers.
8. "Time required to have a vehicle inspected under the 'diagnostic' approach would not be acceptable to the motorist."[1]
9. "It is doubtful that a sufficient number of stations would be available in low vehicle density states because of the cost of construction, training, and maintenance."[2]

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[1] Ibid., p. 14. [2] Ibid., p. 14.

CHAPTER IV

PROPOSED PERIODIC MOTOR VEHICLE INSPECTION SYSTEM FOR MONTANA

Introduction

After evaluating and studying the documents and pamphlets acquired during this study, interviews and correspondence with concerned individuals and organizations, a review of previous studies on the subject of periodic motor vehicle inspection, and an in depth research into the various PMVI systems in operation today, it was determined that a state appointed or licensed inspection system would be the most feasible and advantageous program available to meet the needs of the State of Montana. The state appointed or licensed inspection system is not a complete or perfect solution to Montana's highway safety or inspection needs; however, it is a tried and proven inspection system as evidenced by its existence and effectiveness in twenty-nine inspection states and should serve the state well.

Several distinct reasons led to this decision in choosing a state appointed or licensed inspection system for Montana and are stated below:

1. Service stations, garages and shops already exist in most of the communities in Montana and can with few

exceptions, be easily converted to inspection stations. The stations need only be examined for possible modifications and adaptations of floor space, manpower and equipment requirements. This makes the changeover into PMVI almost painless and at the same time economically feasible to the State of Montana and to the inspection station owners.

2. Generally speaking, this system is conducive to states with large geographic areas and dispersed populations. Montana fits this qualification more so than most that already employ a state appointed or licensed inspection system. For the most part, states with this inspection system find that their operations run quite effectively and efficiently.
3. In most states, since no statute places a limit upon the number of stations that may be licensed, it is conceivable that every area in the state will have more than adequate facilities with which to carry out inspections. Consequently, Montanans would be within close driving distance to the inspection stations where inspections and repairs could be made.
4. The costs entailed in the implementation, operation and supervision of these private stations are usually covered by the state's income from the sale of stickers and/or official inspection signs to the authorized stations.
5. Assurance that inspection standards and inspections will be rigid enough and supervised and enforced properly will

provide Montanans with an effective, quality service in the form of PMVI.

6. Selection and training of a large inspection force, financial considerations and problems incident to the location, selection and purchase of inspection sites, and questions regarding governmental competition with private enterprise are all eliminated with the adoption of a state appointed or licensed inspection system.[1]

Proposed PMVI System

The following portion of this chapter is devoted to the author's conception of the recommended components and procedures necessary to establish an effective state appointed or licensed inspection system in Montana. It is designed to provide a basic guideline or framework from which a properly planned and administered vehicle inspection program can be developed at a later date by competent state authorities. This is but one approach to the vital issue of motor vehicle inspection. It hopefully will solve some of the problems that have been encountered in various inspection plans attempted by other states employing PMVI. The majority of the references, sources and ideas used in the development of this chapter were extracted and interpreted from the Highway Safety Program Manual, Volume 1, Periodic Motor Vehicle Inspection and the United States of America Standards Institute Standards D7.1 and D7.3.

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[1] A Study of Motor Vehicle Inspection, April, 1967, p. 12.

PMVI Objectives

In any periodic motor vehicle inspection program specific objectives need to be established and set down in order to follow through with an effective plan of operation. Listed below are seven specific objectives extracted from Highway Safety Program Manual, Volume 1, which lend themselves well to the needs of Montana's PMVI program. These objectives are necessary to insure that Montana proceeds in the right direction toward reduced traffic accidents and deaths:

1. To establish minimum acceptable standards of safety with respect to the physical operating condition of vehicles and vehicle equipment.
2. To establish minimum criteria for the establishment and operation of inspection stations.
3. To provide for the periodic inspection of all vehicles registered for use on the public highways to ensure compliance with safety standards.
4. To detect through the Vehicle Inspection Program all defective equipment which can impair the safe operation of the vehicle.
5. To ensure that all defects identified during inspection are corrected within a reasonable time.
6. To evaluate the Vehicle Inspection Program.
7. To improve the Program by incorporating changes based on periodic evaluations and cost-effectiveness considerations.[1]

Motor Vehicle Inspection Laws

The inspection laws in Montana must first agree with the state motor vehicle laws. An ambiguous situation must

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 273.

not be allowed to exist if an effective enforcement program and favorable public opinion and support are to be had. The State Legislature must be made cognizant of the specific merits of the state appointed or licensed inspection system and the necessary requirements needed for the program's inception.

The inspection law should provide for an authority to operate and enforce a PMVI program and should refer to an established standard of inspection (i.e., USASI Standards D7.1 and D7.3 or the National Committee on Uniform Traffic Laws and Ordinances). The legislation enacted should be based on the Uniform Vehicle Code and should specify a competent individual or authority who would bear the sole responsibility of the program. Also "The enabling legislation should allow for maximum flexibility on the part of the official responsible for the implementation and operation of the program, so that he could exercise judgment in meeting the program objectives within the type of system authorized."[1]

The inspection law should provide for reciprocity with other states having similar laws and standards as well as remedial actions for violations of the system. Montana House Bill No. 494 is the most recent attempt at introducing PMVI enabling legislation to the citizens of Montana. Of all the bills introduced in the Montana State Legislature during the last thirty-seven years concerning PMVI, this bill,

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 274.

in the author's opinion, summarized and set forth the best proposal so far. However, at the present time, this bill is in committee and will not come up for a legislative decision or vote until the 1974 legislature.

This first step in establishing a PMVI program is a difficult one and the effect of motor vehicle inspection does not come about quickly and automatically with the enabling legislation. The program must be instituted, nurtured and enforced. It is up to the citizens of Montana to see that this comes about.

Program Organization

Administration

The administrative body of the vehicle inspection organization should be required to carry out the objectives of the PMVI program as set forth by the State Legislature. This organization should be placed under the direct management and control of an appointed PMVI administrator. The administrator should be responsible to the Governor for the execution and policies of the program. Basic policy would include location and number of inspection stations, frequency of inspections, some aspects of fiscal policy, inspection station requirements, inspection personnel requirements, training and manpower needs.

The functions to be performed by the PMVI organization should be established and defined. The major functions suggested for a state appointed or licensed inspection system

are shown on the organization chart in Figure 12. It is essential that close supervision and control over inspection stations be integrated into the program. Determining the qualifications and number of field supervisors is important to the program since the supervision, inspection, and enforcement of the PMVI policies and procedures will come under their jurisdiction. From the experience of other states the supervision of the PMVI program by enforcement personnel has distinct advantages and should be considered in the establishment of Montana's inspection program. Normally the number of field supervisors required will be dependent on the number of stations per inspector, the distance between stations and the volume of inspections.[1]

> The administrator should have a staff to perform the following administrative functions:
>
> 1. Inspection station application and approval.
> 2. Inspection equipment evaluation and approval.
> 3. Vehicle certification (sticker) control.
> 4. Development and updating of standards, policies, and procedures.
> 5. Program evaluation.[2]

According to PMVI experts the following represents the minimum personnel required to carry out PMVI administrative functions:

1. Administrator--provides supervision, management and administration of all the program's functions as well as liaison activities with the press and supporting organizations.

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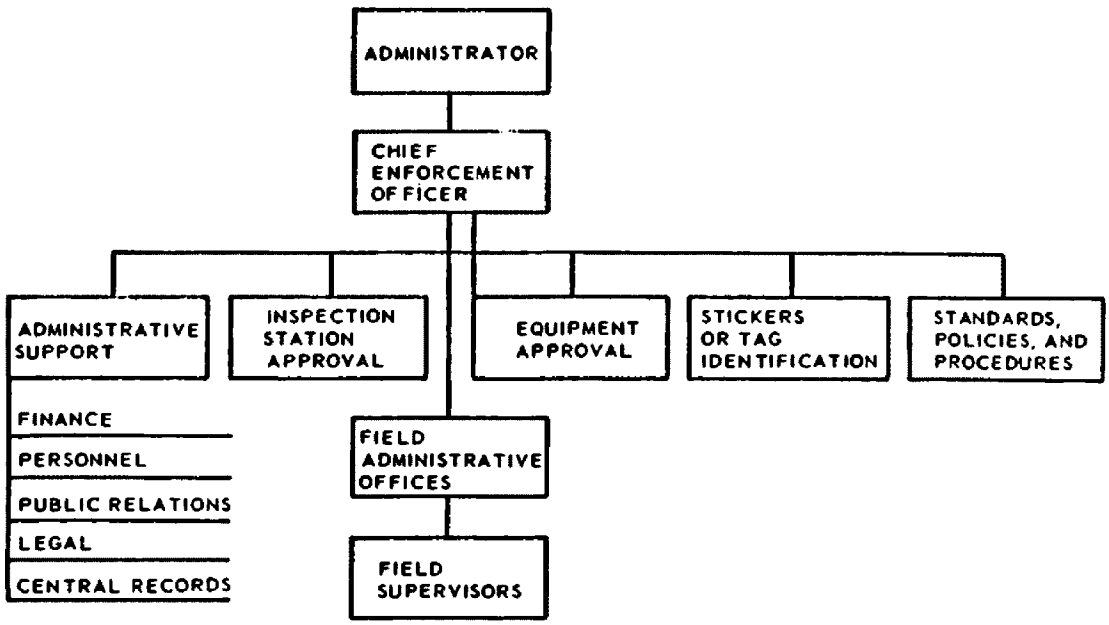
[1] Ibid., p. 276. [2] Ibid.



Source: National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 277.

Fig. 12.--Sample Organization Chart for State Appointed MVI System

2. Deputy Administrator--act as administrator when the need arises and provide liaison and follow-up procedures with field units as required. Aid the administrator in formulating policies and procedures to carry out the functions of the PMVI program.

3. Administrative Assistants--handle all general correspondence and record keeping required by the administrator and his staff.

4. Equipment Technician--recommends approval and maintenance procedures of equipment suggested for use in the PMVI program. Background required for this position is automotive engineering or extensive inspection experience.

5. Clerks--process inspection station applications, have control over vehicle certification, fulfillment of requisitions from stations for vehicle certification and other forms, and processing of field supervisor and inspection station reports.[1]

Program Financing

Montana's PMVI program will incur administrative costs and operating expenses just like every other inspection program does. After a program were operational these operating expenses would be covered by income received through the vehicle inspections, sale of stickers and station certification fees. Implementation costs and operating expenses would vary depending on program requirements, prevailing costs in Montana and the way in which funds were managed by the program's administrators. Areas in the PMVI program which would

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[1] Ibid., p. 278.

require funding include administrative and supervisory personnel, clerical staff, recruiting and training personnel, instructional materials and equipment training apparatus.[1]

In order to cover the costs of these expenditures several sources of funding exist and are at the disposal of the program's administrators. These sources include the sale of inspection stickers and station certificates, fees collected through the certification of inspectors and field supervisors and a portion of the fee resulting from the inspection of a vehicle. When these sources are sufficient to cover costs of running the program then it becomes self-supporting and a possible money maker for the state.

A fee should be charged to motorists who receive a vehicle inspection at the time the inspection is conducted. This fee or charge should be determined by the average length of time it takes for a complete inspection to take place and the hourly wage received by the individual performing the inspection. This rate should be used as a basis for rather than a maximum rate charged to the motorist for an inspection. Montana House Bill No. 494 calls for the fee to be $5.00 per inspection which is above average in comparison to the states now employing a state appointed or licensed inspection system. A cost analysis would be required to assure the motorist of a reasonable fee for services rendered and at the same time insure that all costs were covered and that the inspection stations have some opportunity to profit from their work.

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[1] Ibid.

Location and Number of Inspection Stations

The number of inspection stations required will depend on the physical characteristics of the state, the number and types of vehicles, inspection requirements, hours of operation, and population density. After thorough evaluation of these areas in Montana the location and number of inspection stations should be determined by:

1. The location and number of inspection station applicants who voluntarily apply for appointment.
2. The location and number of inspection station applicants who meet the prescribed minimum requirements for appointments relating to space, equipment, and qualified personnel.[1]

Other factors concerning the determination of the location and number of inspection stations include:

2.2 An applicant should be apprised of the number of inspection stations in his area for his information but not as a criterion for denial of appointment.

2.3 The solicitation of inspection stations is not good practice because it can subrogate the proper supervision of the station. Providing minimum requirements to automotive testing or service facilities, or both, cannot be considered as a solicitation.

2.4 Each jurisdiction should plan that after several years of operation: (1) the ratio of the number of inspection stations to total vehicle registration would reach one to 600; (2) the stations would be so located, on a voluntary basis, that no motorist would be required to travel more than 50 miles to the nearest inspection station.[2]

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[1]United States of America Standards Institute, USA Standard Station Requirements for Inspection of Motor Vehicles, Trailers, and Semitrailers in Stations Appointed and Licensed by Regulatory Authority, D7.3-1968 (New York: United States of America Standards Institute, 1968), p. 5.

[2]Ibid.

A danger that Montana would need to be leary of, in respect to the initial phase of their inspection program is the possibility of having too many station applicants. The manpower needs of a department are exhaustible and when an excessive number of stations are accepted into a program, the field personnel cannot adequately control and enforce the program. Therefore, a maximum number of stations should be set by the PMVI's controlling authority--a number that can be efficiently supervised and yet be adequate in number and location to provide the required inspection services to Montana.

Standards

The inspection of a vehicle should consist of functionally testing the motor vehicle's equipment and evaluating the physical reserve of its components. It is the author's belief that USASI Standard D7.1 provides the most complete set of inspection standards available to PMVI states. The standard

> sets forth performance requirements and methods of testing, with relation to the safe operation of motor vehicles on the public streets and highways of those parts and equipment (braking systems, steering mechanisms, lighting systems, frames, wheels, tires, and others) the proper performance of which bears a distinct relationship to the safe operation of the motor vehicles, trailers, or semitrailers.[1]

This set of standards is the kind which will provide a high degree of inspection yet not so rigid that costly unwarranted repair work would result from it.

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[1]USA Standard Inspection Procedures for Motor Vehicles, Trailers, and Semitrailers Operated on Public Highways, p. 7.

Operating Requirements and Procedures

Vehicles in Montana which should be subject to inspection include:

1. All vehicles registered in the state.
2. Out-of-state vehicles whose inspection sticker expires while in the state of Montana.
3. "All vehicles not currently registered in the state should be inspected within a specified and reasonable time from the date of initial registration and at least annually thereafter. It is recommended that the period of time between initial registration and initial inspection be no longer than 15 calendar days."[1]
4. All new or used vehicles before sale by the dealer owning the vehicles.
5. All trucks, trailers, motorcycles, school buses, emergency vehicles, or other 'non-passenger car' vehicles under inspection procedures appropriate to the particular vehicle.[2]
6. All licensed vehicles which have been damaged in the amount of two-hundred fifty dollars ($250.00) or more be reinspected prior to being operated on Montana's highways.

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[1]National Committee on Uniform Traffic Laws and Ordances, Inspection Laws Annotated, p. 279.

[2]Ibid.

In determining the acceptability of a privately owned garage, service station or shop as an inspection station, the following criteria should be met:

1. Minimum area and space requirements.
2. Minimum equipment requirements.
3. Approved inspector-mechanics.
4. A reputation for sound business practices, of good character and obedience to law and order.[1]
5. Be designated as either a public station or a fleet station.

Detailed and comprehensive information pertaining to the above mentioned criteria can be found in USASI Standard D7.3 or in the Highway Safety Program Manual, Volume 1. These sources should be used to extract the specific information needed to outline pertinent and meaningful practices and procedures for the inspection stations.

A detailed list of items to be inspected and methods of inspection with acceptance and rejection criteria is a definite requirement for Montana's inspection program. The author recommends that USASI Standard D7.1 be used as the basis for determining the items to be inspected. Included below, however, is a minimum list of items that should be inspected to insure an adequate inspection.

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[1] USA Standard Station Requirements for Inspection of Motor Vehicles, Trailers, and Semitrailers in Stations Appointed and Licensed by Regulatory Authority, p. 6.

1. Operators license (if inspection performed by enforcement personnel).
2. Registration.
3. License Plates (valid, legible, and unobstructed).
4. Brakes (service, parking, and emergency systems).
5. Headlights, taillights and auxillary lights.
6. Horn.
7. Electrical systems.
8. Windshield and other windows.
9. Rear and sideview mirrors.
10. Tires, Wheels and Rims.
11. Windshield wipers and washer systems.
12. Steering, alignment and suspension.
13. Exhaust and fuel systems.
14. Hazardous items on, or hazardous conditions of, body, fenders, etc.
15. Safety seat belts and auxiliary safety equipment.
16. Defrosters and defoggers.
17. Vehicle emission control systems.[1]

The inspection items are subject to changes and modifications as the PMVI program is developing. These changes may result from several things:

1. Governmental requirements.
2. Technological innovations.
3. Environmental differences.
4. Development of more stringent criteria resulting from program evaluation.
5. Public reaction or support.
6. Changes in vehicle design or construction.[2]

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 283.

[2]Ibid., pp. 281-82.

All vehicles required to be inspected in the state appointed or licensed inspection stations will be inspected at least once in each calendar year, and again in each succeeding twelve (12) month period. The author suggests the following schedule of mandatory inspections be conducted using the last digit of the vehicle's license plate as the determining factor. All vehicles bearing a Montana license plate ending with the digit "1" or "2" should be inspected on or before May 31, 19xx; those ending in "3" or "4" on or before June 30, 19xx; those ending in "5" or "6" on or before July 31, 19xx; those ending in "7" or "8" on or before August 31, 19xx; and those ending in "9" or "0" on or before September 30, 19xx. All commercial vehicles shall be subject to inspection on or before May 31, 19xx. The program should provide that vehicle owners may submit their vehicles for inspection at anytime during the year prior to their expiration date.

Subsequent studies should be made if the PMVI program is initiated to determine if additional inspections (more than one per year) would be needed to reduce defective equipment, traffic accidents and deaths. However, in a developing PMVI program an annual inspection should be adequate enough to start.

Enforcement

The enforcement of laws, rules and regulations governing the PMVI program is necessary to ensure that the

program's objectives and goals are being carried out. An easy means of identifying and controlling violations should be developed so that the public complies with the PMVI laws, rules and regulations.[1] The enforcement which applies to PMVI should be classified into two categories. One category would be concerned with the supervision and enforcement of the inspection program itself, while the other applied to the activities of the traffic enforcement officers.

The first category would ensure that a valid inspection was being carried out and that standards, rules and regulations were followed. The other type of enforcement refers to policing on the roads and highways. In either case the enforcement should be performed by trained and qualified personnel who know the laws pertaining to PMVI and can conduct a uniform enforcement program.

Enforcement of a program at the inspection station level demands full-time employees if full control and supervision are to be achieved. Duties required of the enforcement officials would be investigating applicants for inspection station approval; examining, training and instructing station owners and mechanics; enforcing laws and regulations; and observing and supervising the type of inspection being performed.

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[1]National Committee on Uniform Traffic Laws and Ordinances, Inspection Laws Annotated, p. 282.

Documentation

A PMVI program requires a considerable amount of documentation which is necessary for administering, controlling and enforcing it. Also, the documentation provides a source of information from which to draw findings pertaining to the effects of vehicle inspection. Documentation is the means by which activity data is the source used to measure the efficiency of the program, while the inspection data provide the particular discrepancies found in the vehicles.

Other important functions that documentation would cover include: control of receipts for inspection fees, inspection station applications and application fees, renewal fees, billing and rebates associated with inspection stickers, and the processing of mechanics applications for approval.

CHAPTER V

SUMMARY AND CONCLUSIONS

Findings

On the basis of the information contained in this study, it is concluded and summarized that:

1. Highway accidents are products of failures in one or more components of the safety system--the vehicle, the driver, the highway and the environment in which the components interact. There is no irrefutable evidence that periodic motor vehicle inspection would automatically result in fewer deaths, injuries, and accidents, but the evidence related in this study strongly suggests that properly equipped and maintained vehicles are important factors in highway safety. PMVI has brought about a decrease in the number of defective vehicles in service. As a result of this improved vehicle condition, a reduction in vehicle accidents and deaths has been found in states employing a PMVI program.

2. Analysis contained in this study showed that motor vehicle accident death rates were lower in those states which have adopted a program of periodic motor vehicle inspection. Similarly, those states which have more than one inspection per year also have substantially fewer traffic deaths.

3. The Federal government recognized the importance of the vehicle in the safety system in 1966 when Congress enacted a comprehensive Highway Safety Program. It has resulted in the promulgation of numerous regulations requiring motor vehicle manufacturers to meet specific performance standards. It has resulted in the recall of literally millions of vehicles for repairs of safety-related parts and components. Congress also recognized that there must be a method of insuring continued viability of the safe performance of the parts, components, or sub-systems manufacturers are required to build into vehicles. Thus, it established as one part of the comprehensive safety program a requirement that states provide a systematic and periodic motor vehicle inspection program for vehicles operated on the nation's highways. This vehicle inspection requirement is one of sixteen standards which must be met by the states. Montana presently does not comply with the PMVI standard and falls short of desired conformance with several other standards. While the Federal government has not yet assessed the 10 per cent penalty against any state not conforming to this standard, it has stated that all states must show significant progress toward meeting all of the sixteen standards in order to escape imposition of the penalty.

4. It was found that two general approaches to PMVI are available. The first approach consists of utilizing private garages as inspection centers licensed by the state. Each private garage is initially investigated by the

administering agency of the state and licensed to operate within specified standards. The garage that does the inspection almost always does the repair. State supervision costs are covered by the sale of inspection stickers and official inspection signs to the private garages. Since 1926, twenty-nine states have adopted this system.

The second approach to PMVI is for the state to assume the full responsibility for owning and operating a state inspection system. This approach permits the inspection system to adopt an assembly-line operation using specialized equipment, state inspectors, and a quick, but thorough inspection. Though this system requires a higher initial cost, the quality of inspection is higher and is performed more uniformly. Presently, New Jersey, Delaware, and the District of Columbia operate under this system.

5. At the present time, a significant consumer protection service is being offered in the form of a diagnostic testing system. It simply is an organized method of testing, checking, and analyzing every safety and performance factor by use of the most sophisticated equipment available. The emphasis is placed upon testing the vehicle under realistic conditions utilizing dynamic equipment. Legislation presently is being enacted by Congress to provide substantial grants to states offering such service.

6. Montana was found to lead the nation in the number of traffic deaths per 100 million vehicle miles and, at the same time, remained significantly higher death

ratio-wise in comparison with the national average. This ranking is understandable because at the present time Montana's highway safety program is at a standstill as evidenced by the disfavor and apathy received toward PMVI and speed limit control legislation. No attempts at reducing traffic accidents and deaths are at hand other than through the initiation of the State Accident Prevention Units which are too few to contribute significantly in reducing the highway death rate in Montana.

7. A state-appointed or licensed vehicle inspection system was recommended in hopes that it might have a positive effect on reducing the number of fatalities on Montana's highways. A general proposed organization was outlined providing policies and procedures necessary to enact an effective PMVI program for Montanans. The benefits expected would be fewer defective and mechanically deficient vehicles on the highway, makes vehicle owners more safety conscious and concerned about maintaining their vehicles in good working condition, creation of new jobs and an increase in business for those associated with the automotive industry, thus, distributing auto repair dollars throughout the state and making it possible to hire several unemployed people, and most importantly lose fewer human lives on state highways.

8. The PMVI proposal defined in this study offers an opportunity for Montana to implement an efficient, effective and beneficial motor vehicle safety inspection program which will bring the state into full conformity with federal

requirements and the increasing trend toward highway safety through PMVI. But more important, it affords the citizens of Montana a safer environment and an important consumer protection service.

Recommendations

On the basis of the findings and conclusions, it is recommended that:

1. Montana enact the appropriate enabling legislation necessary to implement a periodic motor vehicle inspection (preferably a state appointed or licensed system) at the earliest date possible in order to direct its highway safety program toward reducing traffic accidents and deaths attributed to mechanical defects and faulty vehicle systems.

2. A further attempt be made to establish the most effective and economical PMVI system for Montana based on an in depth research and study. This could be done through the employment of a professional PMVI advisor and consultant (i.e., MVI Consultants, Inc., Coverdale and Colpitts) who would be able to give Montana an unbiased opinion on the program best suited to its current situation.

3. An attempt be made to measure the effectiveness of PMVI in reducing vehicle accidents and deaths upon Montana's highways. By using more advanced techniques of statistical analysis, it might be possible to develop stronger evidence either in support of or in opposition to the effectiveness of periodic motor vehicle inspection.

4. Montana undertake the task of establishing an in depth accident investigation program as a means of compiling accurate and useful information in order to determine the value of not only PMVI, but of other areas concerning highway safety.

5. In conjunction with a PMVI program, legislation establishing a maximum speed limit on Montana's highways to further reduce the number of accidents and deaths attributed to excessive speed.

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