NATIONAL ACCIDENT PREVENTION CENTER

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

EIGHTY-EIGHTH CONGRESS

FIRST SESSION

ON

H.R. 133

A BILL TO AMEND TITLE III OF THE PUBLIC HEALTH SERVICE ACT TO ESTABLISH A NATIONAL ACCIDENT PREVENTION CENTER

APRIL 9, 10, 1963

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Committee on Interstate and Foreign Commerce

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NATIONAL ACCIDENT PREVENTION CENTER

TUESDAY, APRIL 9, 1963

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND SAFETY
OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to call, in room 1334, Longworth Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. ROBERTS. The Subcommittee on Public Health and Safety of the House Committee on Interstate and Foreign Commerce will begin hearings this morning on H.R. 133, a bill which I introduced to amend title III of the Public Health Service Act, to establish a National Accident Prevention Center.

This Center would conduct, assist, and foster research, investigations, and studies relating to the causes of accidents and the methods of prevention.

It would also promote coordination of research, make available research facilities to be serviced through appropriate public authorities, make grants-in-aid to universities, hospitals, laboratories, and other public or private agencies, establish an information center on the causes and prevention of accidents, and so forth.

The bill is identical to the one I introduced in the 87th Congress, H.R. 133 of the 87th Congress. The subcommittee held extensive hearings on the bill last year, so I think it will not be necessary this time to go into as much detail.

However, we will be glad to have all the facts anyone cares to express on this subject. A copy of H.R. 133, together with the agency reports thereon, will be made a part of the record at this point.

(The material referred to follows:)

[H.R. 133, 88th Cong., 1st sess.]

A BILL To amend title III of the Public Health Service Act to establish a National Accident Prevention Center

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title III of the Public Health Service Act is amended by adding at the end thereof the following new part:

"PART I—NATIONAL ACCIDENT PREVENTION CENTER

"PURPOSE AND ESTABLISHMENT OF CENTER

"SEC. 381. In order to assist in the advancement, dissemination, and exchange of knowledge relating to the cause and prevention of accidents, there is hereby established in the Public Health Service a National Accident Prevention Center (hereinafter referred to in this part as the 'Center').

"FUNCTIONS OF THE CENTER

"SEC. 382. In carrying out the purposes of this part the Surgeon General shall—

"(1) conduct, assist, and foster research, investigations, studies relating to the causes, and methods of prevention of accidents;

"(2) promote the coordination of research and control programs conducted by public and private agencies, organizations, and individuals;

"(3) make available research facilities of the Service to appropriate public authorities, and to health officials and scientists engaged in special studies related to the purposes of this part;

"(4) make grants-in-aid to universities, hospitals, laboratories and other public or private agencies and institutions for such research projects relating to the purposes of this part as are recommended by the Council, including grants to such agencies and institutions for the construction, acquisition, leasing, equipment, and maintenance of facilities necessary for such research;

"(5) establish an information center on causes and prevention of accidents, and collect and make available, through publications and other appropriate means, information as to, and the practical application of, activities carried on under this part;

"(6) secure from time to time, and for such periods as he deems advisable, the assistance and advice of persons from the United States or abroad who are experts in the field of accident prevention.

"ADMINISTRATION

"SEC. 383. (a) In carrying out the provisions of this part all appropriate provisions of section 301 shall be applicable to the authority of the Surgeon General and grants-in-aid for accident prevention and research and training projects shall be made only after review and recommendation of the Board made pursuant to section 384.

"(b) The Surgeon General shall recommend to the Secretary acceptance of conditional gifts, pursuant to section 501, for study, investigation, or research into the cause, prevention of accidents, or for the acquisition of grounds or for the erection, equipment, or maintenance of premises, buildings, or equipment necessary to carry out this part. Donations of $50,000 or over for carrying out the purposes of this part may be acknowledged by suitable memorials to the donors.

"ACCIDENT PREVENTION ADVISORY BOARD

"SEC. 384. (a) (1) There is hereby established in the Public Health Service an Accident Prevention Advisory Board composed of the Surgeon General or an officer designated by him who shall be chairman, and twelve members appointed by the President none of whom shall be Federal officers or employees. The appointed members, having due regard for the purposes of this part, shall be selected from among representatives of various State, interstate, and local governmental agencies, of public or private interests affected by, or concerned with, accident prevention as well as other individuals who are expert in this field.

"(2) (A) Each member appointed by the President shall hold office for a term of four years, except that any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term. None of the members appointed by the President shall be eligible for reappointment within one year after the end of his preceding term.

"(B) Members of the Board who are not officers or employees of the United States, while attending conferences or meetings of the Board or while otherwise serving at the request of the Surgeon General, shall be entitled to receive compensation at a rate to be fixed by the Secretary of Health, Education, and Welfare but not exceeding $50 per diem, including travel time and while away from their homes or regular places of business. They may be allowed travel expenses including per diem in lieu of subsistence as authorized by law for persons in the Government service employed intermittently.

"(b) The Board shall advise, consult with, and make recommendations to the Surgeon General on matters of policy relating to the activities and functions of the Surgeon General under this part.

"(c) Such clerical and technical assistance as may be necessary to discharge the duties of the Board shall be provided from the personnel of the Public Health Service.

"FUNCTIONS OF BOARD

"SEC. 385. The Board is authorized—

"(1) to review research projects or programs submitted to or initiated by it relating to the study of the cause and prevention of accidents, and certify approval to the Surgeon General, for prosecution under section 382, of any such projects which it believes show promise of making valuable contributions to human knowledge with respect to the cause and prevention of accidents;

"(2) to collect information as to studies which are being carried on in the United States or any other country as to the cause and prevention of accidents, by correspondence or by personal investigation of such studies, and with the approval of the Surgeon General make available such information through the appropriate publications for the benefit of agencies and organizations (public or private), or any other scientists, and for the information of the general public;

"(3) to review applications from any university, hospital, laboratory, or other institution, whether public or private, or from individuals, for grants-in-aid for research projects relating to the cause and prevention of accidents, and certify to the Surgeon General its approval of grants-in-aid in the cases of such projects which show promise of making valuable contributions to human knowledge with respect to the cause and prevention of accidents;

"(4) to recommend to the Surgeon General for acceptance conditional gifts pursuant to section 501 of this Act; and

"(5) to make recommendations to the Surgeon General with respect to carrying out the provisions of this part.

"APPROPRIATIONS

"SEC. 386. Appropriations to carry out the purposes of this part shall be available for the acquisition of land or the erection of buildings only if so specified, but in the absence of express limitation therein may be expended in the District of Columbia for personal services, stenographic recording and translating services, by contract if deemed necessary, without regard to section 3709 of the Revised Statutes; traveling expenses (including the expenses of attendance at meetings when specifically authorized by the Surgeon General); rental, supplies and equipment, purchase and exchange of medical books, books of reference, directories, periodicals, newspapers, and press clippings; purchase, operation, and maintenance of motor-propelled passenger-carrying vehicles; printing and binding (in addition to that otherwise provided by law); and for all other necessary expenses in carrying out the provisions of this part."

DEPARTMENT OF AGRICULTURE,
Washington, D.C., April 9, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

DEAR MR. CHAIRMAN: Thank you for your letter of February 14 giving us the opportunity to report on House bill 133. The bill is entitled "To amend title III of the Public Health Service Act to establish a National Accident Prevention Center."

The purpose of the Center would be to assist in the advancement, dissemination, and exchange of knowledge relating to the cause and prevention of accidents through research, investigations, and studies.

The Department of Agriculture is vitally interested in this subject and is devoting considerable effort to educational work on accident prevention, particularly as it relates to farm and rural people. The Department has conducted research within this area from time to time, but this has been limited by available resources. Accidents continue to kill or disable nearly a million farm residents annually, and cause needless suffereing and economic waste to both the agricultural community and the Nation. Increased emphasis on the safety and productive efficiency of farm families is essential to assure a continuing abundance of food and fiber for the well-being of all our people.

This Department has authority to implement a continuing research and informational program in rural accident prevention through available appropriation channels and has no recommendation to make regarding the enactment of H.R. 133 which would provide similar authority for other areas of governmental interest.

The Bureau of the Budget advises that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely yours,

ORVILLE L. FREEMAN, *Secretary.*

DEPARTMENT OF THE AIR FORCE,
OFFICE OF THE SECRETARY,
Washington, D.C., April 8, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of Defense with respect to H.R. 133, 88th Congress, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center. The Secretary of Defense has delegated to the Department of the Air Force the responsibility for expressing the views of the Department of Defense.

The purpose of H.R. 133 is to establish in the Public Health Service a National Accident Prevention Center which would assist in the advancement, dissemination, and exchange of knowledge relating to the cause and prevention of accidents.

The Department of Defense appreciates the general objective of establishing national facilities to conduct and promote the coordination of accident research, but defers to the Secretary of Health, Education, and Welfare as to the merits of establishing such facilities in the Department of Health, Education, and Welfare and as to the specific provisions of H.R. 133.

Enactment of H.R. 133 would not involve the expenditure of any Department of Defense appropriations.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget advises that, from the standpoint of the administration's program, there is no objection to the presentation of this report for the consideration of the committee.

Sincerely,

EUGENE M. ZUCKERT.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., April 8, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request of February 14, 1963, for a report on H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

The overall objective of H.R. 133, as we interpret its provisions, is to provide additional legislative authority to the Public Health Service to enable that agency to more effectively carry out its current accident prevention activities. This objective would be met by establishing a National Accident Prevention Center in the Public Health Service, by establishing an Accident Prevention Advisory Board, and by authorizing the Surgeon General to carry out a broad range of research, control, promotional, coordinative, informational, and technical assistance functions.

The intent of the bill is not clear as to whether the National Accident Prevention Center is to be a specific organizational unit within the Public Health Service or whether a new facility is authorized for construction. The report you are receiving on this bill from the Department of Health, Education, and Welfare points out that the Public Health Service Act already provides broad authorization for establishment of organizational units and that the current flexibility thus afforded provides a better legislative basis for efficiently organizing service functions than would a specific statutory organizational unit.

With respect to authorizing the construction of a specific facility, the Public Health Service Act now provides broad authority for the construction of additional facilities when required to carry out service programs, and therefore such specific authorization as may be intended by this bill would appear to be unnecessary.

With respect to the broad substantive program authorities for research, promotion, control and other related activities which the bill would grant to the Public Health Service, the Department of Health, Education, and Welfare report points out that, with the possible exception of authority for training and special project grants, the existing statutory authority of the Public Health Service provides an adequate base for the development of service programs in the field of accident prevention.

The activities of the Public Health Service in this field have expanded from a level of 5 employees and $49,000 in 1957 to 147 employees and $4.9 million proposed for 1964 under the broad research and technical assistance authorities already available. In addition, the accident prevention program was raised to division status in the Bureau of State Services in 1961. This substantial increase in the accident prevention activities of the Public Health Service and the elevated organizational status of the program indicates that the Public Health Service has recognized the importance of the subject and has taken appropriate steps, as the principal Federal health agency, to make its proper contribution to the total Federal effort in accident prevention and safety.

Reports to your committee from a number of Federal agencies indicate serious concern that some parts of the bill raise questions of duplication and overlapping of authority and responsibility as between the Public Health Service and other Federal agencies. Without repeating the concerns detailed in the reports of other agencies, we would nevertheless agree in general that the bill, in its present form, appears to authorize the Public Health Service to engage in a number of activities now specifically authorized to be carried out by other Federal agencies, and also appears to authorize the Public Health Service to coordinate such activities. Such broad authority, by extending the role of the Public Health Service beyond its legitimate and particular concern in the field of accident prevention, would, in our opinion, be undesirable and would serve to unnecessarily complicate and burden the effective functioning of the overall Federal effort in accident prevention and safety.

Accordingly, while the Bureau of the Budget favors and has supported an effective Public Health Service program in accident prevention, we do not believe that any additional legislation is necessary at this time to enable the Service to develop and carry out its appropriate functions in this field. Further, we believe that the bill raises serious questions as to the relationships and responsibilities of the Public Health Service vis-a-vis other Federal agencies.

Sincerely yours,

PHILLIP S. HUGHES,
Assistant Director for Legislative Reference.

CIVIL AERONAUTICS BOARD,
Washington, D.C., April 8, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in further reply to your letter of February 14, 1963, requesting a report by the Board on H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

H.R. 133 would establish a new unit in the Public Health Service to be known as the National Accident Prevention Center. The functions of the Center would be administered by the Surgeon General, who, among other things, would be authorized to conduct investigations and studies relating to causes and methods of preventing accidents.

The bill proposes a very comprehensive program in relation to the cause and prevention of accidents. The Board looks with favor upon the general objective of the bill. While presumably not so intended, the coverage of the bill appears broad enough to include aircraft accidents, which the Civil Aeronautics Board has the statutory responsibility of investigating under title VII of the Federal Aviation Act.

For this reason, the Board would be opposed to the legislation in its present form. In order to preserve the jurisdiction of the Board and prevent undesirable duplication, we recommend that a new section 387 be added to H.R. 133, reading as follows:

"SEC. 387. The provisions of this Act shall not be deemed to modify or repeal any provisions of the Federal Aviation Act of 1958, or to limit in any way the functions of the Civil Aeronautics Board relating to accidents involving civil aircraft, or relating to studies and investigations on matters pertaining to safety in air navigation and the prevention of accidents. Nothing in this Act shall authorize the Surgeon General or the Accident Prevention Advisory Board to perform any of the accident investigative functions which are the statutory responsibility of the Civil Aeronautics Board under the Federal Aviation Act of 1958, as now or hereafter amended."

Apart from the foregoing, we have no comment to make on the proposed legislation.

The Board has been advised by the Bureau of the Budget that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely yours,

ALAN S. BOYD, *Chairman.*

GENERAL COUNSEL OF THE DEPARTMENT OF COMMERCE,
Washington, D.C., April 24, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in further reply to your request for the views of this Department with respect to H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

The bill would establish in the Public Health Service a National Accident Prevention Center which would have certain powers and duties with respect to research and investigations relating to the causes and prevention of accidents. Our report is limited to the effect that enactment of the bill would have on traffic accident prevention.

While this bill deals principally with the functions and organization of the Public Health Service in the Department of Health, Education, and Welfare, the Department of Commerce is fully in accord with the stated objective of furthering the advancement, dissemination, and exchange of knowledge relating to the prevention of accidents. The interest of this Department in this objective is demonstrated in many ways, notably through programs of the Office of Highway Safety in the Bureau of Public Roads and by active participation in the Interdepartmental Highway Safety Board. The Secretary of Commerce serves as Chairman of the Interdepartmental Highway Safety Board, recently activated and operating under the terms of Executive Order 10898. The Board functions as a means for coordination, through voluntary agreement, of the policies, programs, and projects of the several Federal departments and agencies having responsibilities in the field of highway safety.

It is our understanding that the interest of the Public Health Service in this bill is directed toward three principal provisions. The first is the proposed authority to establish within the Public Health Service an intramural research center for work in medical, clinical, and behavioral science aspects of accident prevention. To the extent that this work would be within the areas of responsibility and competence of the Public Health Service, we believe that the establishment of such a center would make an important contribution to the broad interdisciplinary effort required in highway safety.

H.R. 133 would also permit the Surgeon General to make special project grants to underwrite research. It is understood that while certain research authority in this area already exists, that additional authority is required to carry forward developmental projects. A related feature of the bill would permit the Surgeon General to make training grants. Both of these provisions also seem warranted.

It also appears that the proposed grant of authority to the Surgeon General contained in H.R. 133 would authorize activities which might infringe upon the functions of the Office of Highway Safety in the Bureau of Public Roads of this Department, and the coordinating functions of the Interdepartmental Highway

Safety Board. In order to more accurately identify the scope of the authority which would be granted, we suggest that the bill be amended to insert, in the section relating to purpose and establishment, after the word "knowledge" on line 8 of page 1, the words "in the medical, clinical, and behavioral sciences."

Other than to suggest the above amendment, the Department of Commerce would defer to the views of the Department of Health, Education, and Welfare concerning H.R. 133.

The Bureau of the Budget advises that there would be no objection to the submission of this report from the standpoint of the administration's program.

Sincerely,

ROBERT E. GILES.

FEDERAL AVIATION AGENCY,
OFFICE OF THE ADMINISTRATOR,
Washington, D.C., April 15, 1963.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your letter of February 14, 1963, requesting the views of this Agency on H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

We understand that the Bureau of the Budget does not believe that any additional legislation is necessary at this time to enable the Public Health Service to carry out its appropriate functions in this field. Certainly the Federal Aviation Agency has adequate legislative authority for securing information relating to aviation accidents. I therefore defer to the views of the Bureau with regard to the need for the proposed legislation.

The Bureau of the Budget has advised that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely,

N. E. HALABY, *Administrator.*

GENERAL SERVICES ADMINISTRATION,
Washington, D.C., April 8, 1963.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter of February 14, 1963, requested the views of the General Services Administration on H.R. 133, 88th Congress, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

GSA is currently represented on the Federal Safety Council reestablished by Executive Order No. 10990 of February 2, 1962, to advise the Secretary of Labor on the development and maintenance of safety organizations and programs in the Federal Government. The Council also establishes criteria, standards, and procedures designed to eliminate work hazards and health risks, and to prevent injuries and accidents in Federal employment.

In addition to the activities of the Federal Safety Council, the Secretary of Labor is engaged currently in developing and promoting standards of industrial safety and health, and in assisting the several States in the preparation of industrial safety codes and development of statewide accident prevention programs.

The subject bill, H.R. 133, proposes to establish a National Accident Prevention Center in the Public Health Service of the Department of Health, Education, and Welfare. The functions of the proposed National Accident Prevention Center appear to overlap those already vested in the Secretary of Labor. It is the view of GSA that the functions prescribed by the subject bill are more closely related to conditions of employment than to problems of health.

Although GSA is in full accord with the objectives of H.R. 133, we do not favor enactment of this bill in its present form for the reasons stated above.

It is not anticipated that H.R. 133, if enacted, would have any financial effect upon GSA operations.

The Bureau of the Budget has advised that, from the standpoint of the administration's program, there is no objection to the submission of this report to your committee.

Sincerely yours,

BERNARD L. BOUTIN, *Administrator.*

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE,
Washington, April 9, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in response to your request of February 14, 1963, for a report on H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

The bill, identical to one of the same number we reported on last year, would establish a National Accident Prevention Center in the Public Health Service. It would authorize the Surgeon General to conduct and foster research in the causes and methods of preventing accidents; to promote the coordination of research and control programs conducted by public and private agencies and individuals; to make available the research facilities of the Service to others; to make grants-in-aid to universities, hospitals, laboratorees, and other public or private agencies for research projects in accident prevention, including grants for constructing, acquiring, leasing, equipping, and maintaining research facilities; to establish an information center and make available information on the causes and prevention of accidents; and to secure the assistance and advice of persons from the United States or abroad who are experts in the field of accident prevention.

The bill would also establish in the Public Health Service an Accident Prevention Advisory Board composed of the Surgeon General as Chairman and 12 members appointed by the President. The Board would have responsibility for advising the Surgeon General on matters of policy relating to the accident prevention activities of the Service, for reviewing and recommending action on applications for research grants, and for collecting and disseminating information on studies being carried out as to the cause and prevention of accidents.

The primary objective of H.R. 133, as we interpret its provisions, is to specify the role and responsibilities of the Public Health Service in the field of accident prevention. We are entirely in accord with this objective.

The continuing high toll of injuries, deaths, and economic loss resulting from accidents in the United States is one of the major health problems affecting the American people today. Accidents are the leading cause of death among persons from 1 to 35 years of age. In the 15 to 25 age group, accidents account for more deaths than all other causes combined. It is therefore essential that the Public Health Service, as the principal health agency of the Federal Government, concern itself with this major health problem and, in cooperation with other Federal agencies with substantial interests in the problem, make full use of its resources in developing improved protection against this major cause of death and disability.

For the most part, the existing statutory authority of the Public Health Service provides an adequate base for the development of Service programs in the field of accident prevention. The only additional authorities which may be needed are for training grants and for special projects to stimulate the development or demonstration of new methods of accident prevention and control.

The activities of the Public Health Service in the field of accident prevention have been substantially increased during recent years under the existing broad research and technical assistance authorities in the Public Health Service Act. The Public Health Service program currently being carried out covers accidental deaths and injuries occurring on the highways, in the home, and in public places such as recreational areas. The Public Health Service approach and its greatest contribution to accident prevention will be made through the study and elimination of accident causes which arise from the human element in the accident situation. Special attention is being given to studying accidents of certain problem age groups such as poisoning in children and falls in the older age group.

The proper study of many of the human variables associated with accidents does require special research facilities which we are now in the process of providing. For example, simulation equipment to study drivers is being developed

with funds provided by Congress in fiscal year 1963 and requested in fiscal year 1964. Similarly, program plans provide for staffing and equipping a project in St. Petersburg, Fla., for a study of accidents among the aged. Much more needs to be done by the Public Health Service as well as by many other governmental and nongovernmental groups, however, in order to determine the causes and develop the preventive techniques which will be necessary for a fully effective national accident prevention program.

H.R. 133 would serve the useful purpose of highlighting the functions and role of the Service with specific reference to accident prevention. There are, however, a number of features of the bill which we believe should be modified or clarified.

It is not clear, for example, whether the intent of the bill is to establish an organizational unit in the Public Health Service called the National Accident Prevention Center or whether what is contemplated is to authorize the construction of a facility to be known by that name. The Public Health Service Act already provides broad authorization for the Surgeon General with the approval of the Secretary, to establish organizational units below the Bureau level. This current flexibility of organizational arrangement provides, we feel, a better legislative basis for efficiently organizing the functions of the Service than would a statutory requirement for the establishment of a specific organizational unit. The act also now provides authority to construct facilities as they become needed to carry out Service programs.

We are also concerned, as we stated in our report last year, that some parts of H.R. 133 are so broadly stated as to raise a possible issue of duplication of authority and responsibility of other Federal agencies. Accident prevention in its broadest sense is a legitimate and necessary concern of many Federal departments. The Public Health Service has a particular concern for the protection and promotion of health, of which accident prevention is an essential part. We feel, however, that is should be made clear in the legislation that the responsibilities assigned to the Service do not supersede or repeal the authorities of other Federal agencies for accident prevention activities within their own areas of responsibility.

The Public Health Service Act as amended by Public Law 87–838 provides authority for the Surgeon General to appoint advisory committees for the purpose of advising him in connection with any of his functions. For this reason, additional authorization, such as is contained in H.R. 133 for the establishment of an Accident Prevention Advisory Board, would not be necessary.

In summary, we are in accord with and support the overall objectives of H.R. 133. We can provide such technical assistance as your committee may wish in developing legislation pertaining to the role and functions of the Public Health Service. We assume, however, that your committee will elicit the views of other interested departments and agencies with respect to their functions and responsibilities in the field of accident prevention.

We are advised by the Bureau of the Budget that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely,

ANTHONY J. CELEBREZZE, *Secretary.*

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., April 9, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: Your committee has requested a report on H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

This Department makes no recommendation regarding the enactment of H.R. 133, but should the committee favorably consider it, we recommend that it be amended to make it clear that it does not duplicate the functions of the Bureau of Mines or other Federal agencies in the field of accident prevention.

H.R. 133 amends title III of the Public Health Service Act, as amended (42 U.S.C., sec. 241 et seq.) by adding a new part which authorizes the establishment of a National Accident Prevention Center in the Public Health Service for the purposes of assisting in the "advancement, dissemination, and exchange of knowledge relating to the cause and prevention of accidents." In addition, H.R. 133 authorizes the Surgeon General to make grants-in-aid for research projects and establishes an Accident Prevention Advisory Board.

Section 301 of the Public Health Service Act, as amended (42 U.S.C., sec. 241) provides as follows:

"The Surgeon General shall conduct in the Service, and encourage, cooperate with, and render assistance to other appropriate public authorities, scientific institutions, and scientists in the conduct of, and promote the coordination of, research, investigations, experiments, demonstrations, and studies relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and impairments of man * * *."

It is clear from the above statute that the Surgeon General is primarily concerned with environmental control of health problems and has developed an expertise in this field. The term "accident" encompasses both personal injuries and property damage. The great majority of accidents reported each year do not involve any personal injuries. Thus, while the concept of a National Accident Prevention Center may have merit, we question the advisability of its establishment in an agency which is not concerned with problems related to the causes of accidents to real or personal property. Even in the case of personal injuries, much of the research connected with the cause and prevention of accidents appears to be more nearly associated with the field of engineering than with the medical profession.

Section 384 of the bill establishes an Accident Prevention Advisory Board for the purposes of advising, consulting with, and making recommendations to the Surgeon General on matters of policy. Section 385 of H.R. 133 also authorizes the Board to review research projects or programs submitted to or initiated by the Board and certify approval to the Surgeon General; to collect and disseminate information as to studies being carried on in the United States relating to the cause and prevention of accidents; to review applications for grants-in-aid for research projects under this legislation; to recommend acceptance of conditional gifts; and to make recommendations regarding the administration of the act. We believe that the functions of the Board under this section of the bill will duplicate the functions of the Surgeon General under section 382. Further, we question the desirability of giving an advisory board such specific functions when the members will not be Federal employees and may not meet often enough to properly carry out these functions. Accordingly, we suggest that section 385 be deleted.

H.R. 133 in its present form would duplicate activities conducted by the Secretary of the Interior, through the Bureau of Mines. The act of May 16, 1910, as amended (30 U.S.C. sec. 3) established the Bureau of Mines. Section 2 of that act provides:

"It shall be the province and duty of the Bureau of Mines, with the approval of the Secretary of the Interior, to conduct inquiries and scientific and technologic investigations concerning mining, and the preparation, treatment, and utilization of mineral substances with a view to improving health conditions, and increasing safety * * * in the mining, quarrying, metallurgical, and other mineral industries; * * * and to disseminate information concerning these subjects * * *."

Since its establishment, the advancement of health and safety, collection of data on causes of accidents, and the conduct of educational programs in accident prevention in the mineral and allied industries, and in mines in particular, have been responsibilities of major concern to the Bureau of Mines. The Bureau's staff has developed an expertise in these fields not duplicated in any other agency. The Bureau's success in collecting data on causes of accidents and in accident prevention training in the mineral industries, which is based on these data and on results of investigations and technical research by the Bureau, has long been recognized by the Congress, by other agencies of the Federal and State Governments, and by the mineral industries.

The accident prevention problems of the mineral industries in underground operations are peculiar to those industries and not susceptible to attack by techniques applicable in industries operating surface intsallations. This was recognized by the Congress in the legislation establishing the Bureau of Mines and in subsequent legislation that conferred inspection and enforcement authority upon the Bureau in respect to its safety program in coal mines. See the Federal Coal Mine Safety Act, as amended (30 U.S.C. 451 et seq.). The Federal Coal Mine Safety Act, supra, provides that the Secretary of the Interior, acting through the Bureau, shall collect and report data on accidents in coal mines that result in personal injury. The Public Health Service also recognizes these facts as demonstrated by a memorandum of understanding, dated January 1962, which provides that the Public Health Service shall conduct the medical phases of health studies in the mineral industries and the Bureau shall conduct the engineering phases of such health and safety studies.

The present health and safety activities of the Bureau of Mines are performed by about 700 employees and require an annual expenditure of $8,953,000 (estimate for fiscal year 1964). These activities include all the functions of the proposed National Accident Prevention Center with respect to the mineral industries, except for the authority to make grants-in-aid under section 382(4) of the bill. We have not found that such authority is necessary to carry out effectively our programs for collection of data on accidents and for the prevention of accidents.

This Department, through the Bureau of Mines, believes it is best qualified to provide and evaluate Federal participation in accident prevention programs relating to all mineral industries. Thus, unless the bill is amended to exclude expressly the mineral industries and such other accident prevention activities, which are the legitimate and necessary concern of other Federal agencies, we believe it will result in needless duplication of effort.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

KENNETH HOLUM,
Assistant Secretary of the Interior.

INTERSTATE COMMERCE COMMISSION,
OFFICE OF THE CHAIRMAN,
Washington, D.C., March 25, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR CHAIRMAN HARRIS: Your letter of February 14, 1963, addressed to the Chairman of the Commission and requesting comments on a bill, H.R. 133, introduced by Congressman Roberts, to amend title III of the Public Health Service Act to establish a National Accident Prevention Center, has been referred to our committee on legislation. After consideration by that committee, I am authorized to submit the following comments in its behalf:

H.R. 133 would amend the above-mentioned act so as to establish a National Accident Prevention Center in the Public Health Service. In brief, the functions of the proposed Center would be to conduct, promote, and coordinate research and investigations into the causes and prevention of accidents; to make the research facilities of the Public Health Service available for such purposes; to make grants-in-aid to institutions and other private or public agencies engaged in such research projects; to establish an information center; and to secure the advice and assistance of experts in the field of accident prevention.

The bill also provides for the establishment in the Public Health Service of an Accident Prevention Advisory Board. The Board would be headed by the Surgeon General, as chairman, or an officer designated by him for that purpose, and would consist of 12 additional members appointed by the President (none of whom are to be Federal employees), to be selected from among representatives of various State, interstate, and local governmental agencies; public and private interests concerned with or affected by accident prevention; and individual experts in the field. Besides its general function of advising, consulting with, and making recommendations to the Surgeon General with respect to his duties in the operation of the Center, the Board would be specifically charged with the duties of reviewing accident prevention research projects and certifying its approval of those which it deems meritorious; collecting and making available information on studies of accident causes and prevention; and reviewing applications for grants-in-aid and certifying its approval of those projects which show promise of making valuable contributions to human knowledge in the field of accident prevention.

Determining the causes of, and finding the means of preventing, accidents has become a matter of serious concern in this country. Among the areas of human activity in which the accident prevention problem has received special attention are industrial, farm, home, mine, radiation, water carrier, aircraft, railway, and highway hazards. Each of these areas is now in some measure the subject of interest and responsibility of various departments or agencies of the Federal Government, including this Commission. The area of most immediate concern to this Commission is, of course, that of promoting railroad and motor carrier safety. With respect to railroads, its responsibility includes the administration and enforcement of the several Safety Appliance Acts, the Hours of Service Act and the Locomotive Inspection Act. As to motor carriers, the Commission is authorized to prescribe regulations governing the qualifications and maximum

hours of service of employees and the safety of operation and equipment. With respect to common carriers, whether by rail or highway, the Commission administers the so-called Transportation of Explosives Act.

We believe that the encouragement and coordination of research in the field of accident causes and prevention which the proposed Center and Advisory Board would undertake would be of benefit to all of the Federal agencies concerned with accident prevention, and also to other agencies, organizations, and individuals. The proposed financial assistance to the research projects, in the form of grants-in-aid, would, of course, provide tangible encouragement in this important field. The results and findings of the researchers, duly published and made available to those interested and concerned, should be useful to all those charged with promoting safety and reducing accidents of all types. In addition, the making available of research facilities, the maintenance of an information center, and the advice and assistance of experts—all of which are contemplated by the bill—would be of material benefit.

Illustrative of the potential usefulness which the Center could be to this Commission is the fact that in the discharge of its responsibilities in the field of motor carrier safety the Commission often needs the counsel and advice of experts on such matters as standards of eyesight, hearing, and the effects of organic, nervous, and functional diseases on the human body. It also needs information as to the effect of fatigue and drugs on driving ability. Research in such areas promoted and aided by the Center and Advisory Board would undoubtedly be of benefit to this Commission in its task of prescribing motor carrier safety regulations.

While we favor the objectives of this proposed measure, we believe, at least insofar as this Commission is concerned, that it should be amended to make it clear that nothing contained therein should be construed as affecting its jurisdiction in the fields of railroad and motor carrier safety, or as requiring submission of proposed regulations, for which the Commission has statutory responsibility, to the Surgeon General, the Center, or the Advisory Board, for prior approval.

Editorially, it is not clear what is intended by the reference made to "the Council," in line 19, page 2, of the bill. Elsewhere in the bill the duty of recommending the recipients of grants-in-aid is placed upon the proposed Advisory Board. It appears, therefore, that reference to "the Council" was inadvertent, and that a phrase such as "the Accident Prevention Advisory Board, hereinafter provided for," should be substituted in lieu thereof.

If amended as suggested above, we would have no objection to the enactment of H.R. 133.

Respectfully submitted.

COMMITTEE ON LEGISLATION.
LAURENCE K. WALRATH, *Chairman*,
RUPERT L. MURPHY.

POST OFFICE DEPARTMENT,
OFFICE OF THE GENERAL COUNSEL,
Washington, D.C., April 8, 1963.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This Department has given consideration to the request for a report on H.R. 133, a bill to amend title III of the Public Health Service Act to establish a National Accident Prevention Center.

This measure would establish within the Public Health Service a National Accident Prevention Center which would:

1. Conduct, assist, and foster research, investigations, studies relating to the causes, and methods of prevention of accidents;
2. Promote the coordination of research and control programs conducted by public and private agencies, organizations, and individuals;
3. Make available research facilities of the Service to appropriate public authorities, health officials, and scientists;
4. Make grants-in-aid to universities, hospitals, laboratories and other agencies and institutions for such research projects;
5. Establish an information center on causes and prevention of accidents, and collect and make available, such information;
6. Secure the assistance and advice of persons who are experts in the field of accident prevention.

The bill would also establish an Accident Prevention Advisory Board with the Surgeon General, or an officer designated by him, as Chairman, and 12 non-

Federal employee members who are concerned with the accident prevention field. The Board would review research projects or programs, review and make recommendations for grants-in-aid and make recommendations to the Surgeon General with respect to carrying out the program. This Department recognizes the need for positive action to reduce accidents and to eliminate the causes of accidents, and wholeheartedly agrees with the principles of the bill to coordinate research and control programs and assist in the advancement, dissemination, and exchange of knowledge concerning the causes and prevention of accidents as it relates not only to Federal agencies but to private agencies, organizations, and individuals as well. However, H.R. 133 as presently drafted is not clear with respect to the following areas:

(1) The general language of the bill indicates that the fields of traffic and industrial accidents (where programing applies primarily to damage to equipment or property) are included, as well as those accidents posing medical problems. The placement of this program within the Public Health Service would appear to imply limited jurisdiction with respect to the health and medical areas only.

(2) It is understood that several Departments and agencies of the Federal Government, such as the Department of Labor, Department of Interior, Interstate Commerce Commission, Federal Aviation Agency, and others already have statutory authority and responsibility in accident prevention with respect to the operation of the Federal Government, State governments and private business. The responsibilities of these agencies involve many of the functions identified for the National Accident Prevention Center such as research, investigations and studies relating to the causes and methods of accident prevention, the dissemination of information on all aspects of the prevention of accidents, and the like. It does not appear that the proposed legislation differentiates between those responsibilities which are already assigned to Departments and agencies and those which would be assigned to the Public Health Service.

It is believed that unless the responsibilities of the agencies involved are clarified a situation could develop which would result in duplication of effort and consequent added expense in the operation of an accident prevention program. In addition, numerous administrative problems would be created among the various Federal agencies required by 5 U.S.C. 784(c) to operate a safety promotion program.

We have been advised by the Bureau of the Budget that from the standpoint of the administration's program there is no objection to the submission of this report to the committee.

Sincerely yours,

LOUIS J. DOYLE, *General Counsel.*

Mr. ROBERTS. Our first witness will be Mr. Wilbur J. Cohen, Assistant Secretary of the Department of Health, Education, and Welfare. He is accompanied by Dr. Luther L. Terry, Surgeon General and Dr. Paul V. Joliet, Chief, Division of Accident Prevention.

Mr. Secretary, we are glad to have you appear before our subcommittee and you may proceed with your statement.

STATEMENT OF WILBUR J. COHEN, ASSISTANT SECRETARY, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, ACCOMPANIED BY DR. LUTHER L. TERRY, SURGEON GENERAL, AND DR. PAUL V. JOLIET, CHIEF, DIVISION OF ACCIDENT PREVENTION

Mr. COHEN. Thank you.

Mr. Chairman, as you indicated, I am accompanied by the distinguished Surgeon General of the Public Health Service, Dr. Terry, and by the Chief of the Division of Accident Prevention in the Public Health Service, Dr. Paul V. Joliet. We are available to answer any questions that the subcommittee might wish to make.

I appreciate this opportunity to present to you the views of the Department of Health, Education, and Welfare on H.R. 133, a bill to

establish a National Accident Prevention Center in the Public Health Service.

I know that the members of this subcommittee, through your intensive study of the accident problem in all its aspects, are very familiar with the scope and ramifications of the problem.

However, I would like to outline briefly some of the principal factors, as we see them, in order to put my discussion of the bill itself into proper context.

The history of the advancement of medical science illustrates over and over that the major obstacle to progress has often been a tendency to regard the problem—whatever it was—as unconquerable. This has been the case with almost every disease we have overcome or substantially reduced by the process of research, investigation, application, analysis and refinement.

This has equally been the case with accidents. Public opinion, not only in the United States but throughout the civilized world, has tended to regard accidents as an unfortunate occurrence to be accepted as inevitable.

I do not believe that we who are officially concerned with the problem of the public health, can accept over 90,000 deaths and some 45 million injuries every year without intensifying the efforts now underway to reduce this constant, tragic toll and loss in our community.

On the basis of our admittedly brief experience in treating accidents as a health problem, we know that many, and probably most, of these accidental deaths and injuries can be prevented. The national significance of the above figures is brought into sharper focus if we look at the type of accidents which add up to these dreadful totals.

First, let us examine the deaths. These include 15,000 children under 15 years of age—more than the total of deaths in this age group from the next four leading causes combined.

For people 15 through 35 years of age, accidents continue to be the principal killer—with about 24,000 deaths. In 1 year, more than 28,000 Americans between the ages of 35 and 65 and 24,000 of our senior citizens 65 years of age and older, lose their lives by accidents. These tragedies are repeated year after year, with only slight variance.

Now, let us consider injuries. Each year some 45 million American men, women, and children sustain accidental injuries severe enough to require medical care or to incapacitate them beyond the day of injury.

Thousands of these injuries produced lifelong handicaps, including blindness, loss of limbs, and disfigurements. Accidents are the leading cause of impairments in the United States. Each year over 2 million persons are hospitalized for the treatment of accidental injuries.

The economic loss from accidents is over $13 billion every year. Part of this loss is visible to everyone who drives along our country's streets and highways. Much of it is not, however, except to the victims, their families, and medical and hospital personnel.

When you consider the toll that accidents inflict among our young people from whom the Nation must draw the bulk of its productive strength, you see a loss of life every year greater than the size of an Army division.

When you consider the accidental casualties among our senior population, you see a loss of experience and mature judgment that no nation can long afford.

The Public Health Service has long been concerned by this needless toll of death and disability and is engaged in developing certain preventive measures.

Before I go on, Mr. Chairman, with your permission, I would like to show you these charts that we have prepared, which present somewhat the same information, but in a more graphic form.

The first chart shows the accidental death rate in the United States from 1935 to the present and the rate is computed per 100,000 population.

You will see that the top red line, which is the total of all accidental deaths, has been going down somewhat as a rate, so that we have been making some progress, but the significant factor is that the rate with respect to deaths due to motor vehicles has been remaining fairly consistent. That remains an area for very important research.

I think this chart demonstrates two important factors: That the accident rate can be brought down by study and research, and work and community action; and that we still have a lot to do with respect to work on the motor vehicle area.

This second chart looks at the problem from the number of hospital bed-days that are required to take care of different kinds of diseases or disabilities. In this case we have a rather interesting fact; that accidents take up 20 million bed-days in hospitals per year.

Twelve percent of the total bed-days of hospitals in the United States at the present time are occupied due to accidents, whether they are fatal or nonfatal. The impressive thing is that this is larger than taking care of the deliveries of the 4 million babies which are born each year. It is more than the hospital bed-days caused by people who have heart disease. It is more than four times the number of bed-days required to take care of cancer, and more than 12 times the number of bed-days caused to take care of diabetes. You have some appreciation here of the tremendous load that accidents cause in terms of not only using hospital beds, but also the skilled personnel that is required to provide service in the hospital.

The third chart demonstrates an interesting point: How the accidental death rate varies by age. You will notice from this chart that the accidental rate is very high, of course, when children are very young, and then it is low during the period of the age from 1 to 7 or 8, when I suppose the parents are very solicitous of the welfare of their children and very careful about them.

As they become teenagers, you can see that the death rate from accidents begins to go up very appreciably. When a young boy or girl is 15 or 20 years old, and his parents have spent $15,000 or $20,000 to educate him so that he will be a productive citizen, to have his life snuffed off at age 20 or 24, means the loss of productive capacity of about $500,000 in terms of the loss of the contribution of that individual after society has invested so much in his education and preparation. This is a tremendous loss.

When we look at accidental deaths by age and by cause, we find that there are significant differences, and this shows the areas of research that would be necessary to undertake to find out how to prevent these deaths.

In the first group, for the children under 1 year, the largest single factor is inhalation and ingestion causing suffocation, tragedies which you read about quite frequently in the newspapers.

For the group 1 to 14 years old, this large bar here shows motor vehicles as the principal cause of death, but drowning, and water transport, and fires are very large. The need for community-type programs to deal with these young people is very important.

Two-thirds of the accidental deaths in the age group 15 to 24 are caused by motor vehicles. Research in the motor vehicle area as to what will bring down the fatalities among young people when they get into a motorcar, is one of the most fruitful avenues that we have to decrease this wasteful economic loss among our young people.

Another area that certainly shows the need for further research and development is among our aged people. Fifty-five percent of their accidental deaths are caused by falls. I think that when you get into it, you will find that it is not as simple as it may seem. Is it the physiological development of the individual that causes him to fall, or does the fall cause the fracture or the death? And a lot more needs to be done with respect to the causative factors as to why so many of our senior citizens do not die of old age in the traditional sense, but die because they fall. This get us into the whole problem of the restructuring of our homes and our offices so that old people won't slip or fall in the bathtub, and preventive measures that can be built into homes and offices.

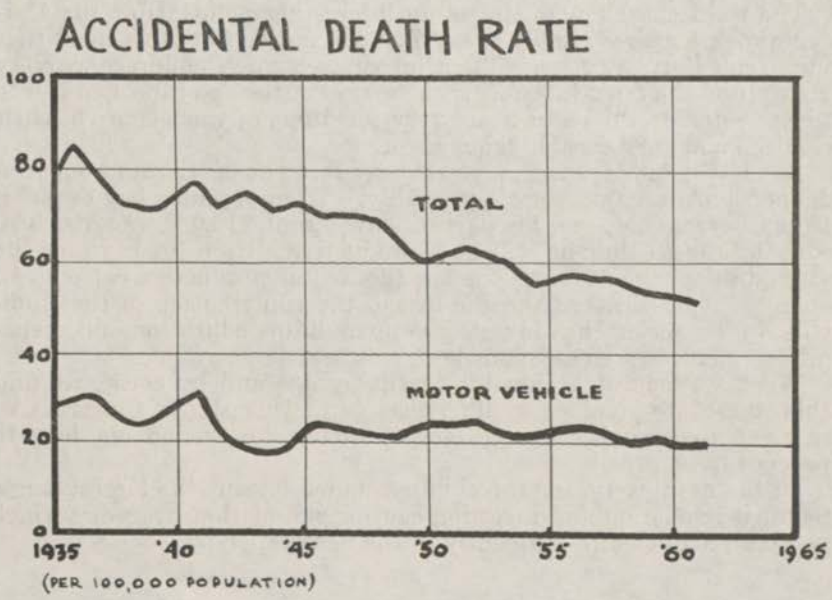
This last chart illustrates the place of nonfatal injuries. The important thing here is that nearly half of these injuries occur in the home, and so again research is necessary to determine what is it that causes these accidents in the home and what can be done to prevent these accidents in the home.

As to the family or the human factor, certainly those are worthy of very considerable research.

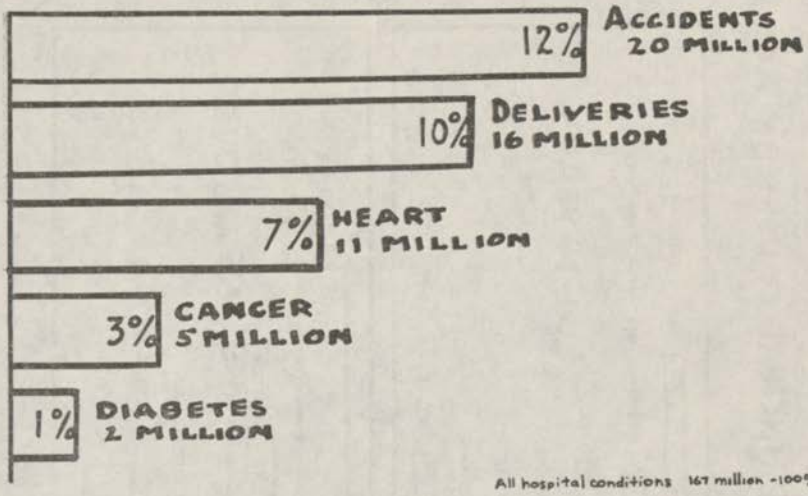
Mr. ROBERTS. At this point, Mr. Secretary, without any questions, I would like you, if you would, to offer these charts for inclusion in the record.

Mr. COHEN. Thank you, Mr. Chairman.

(The charts follow:)

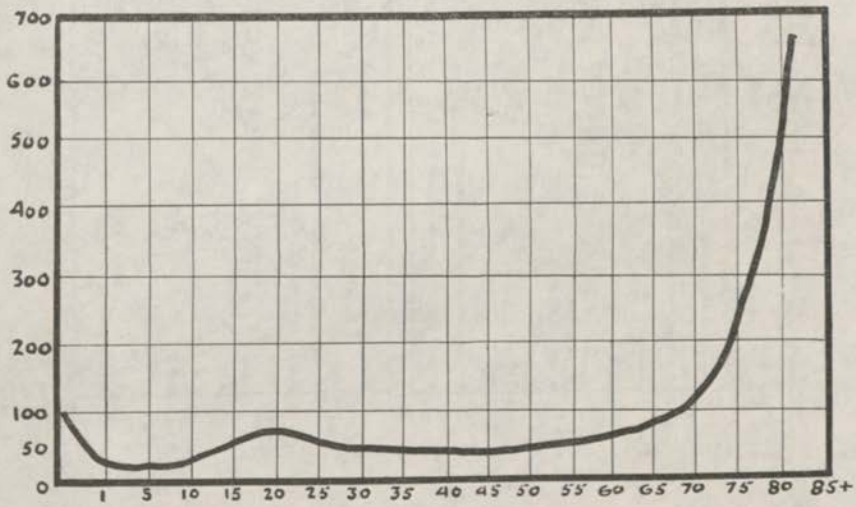


HOSPITAL BED DAYS - PRINCIPAL CAUSES

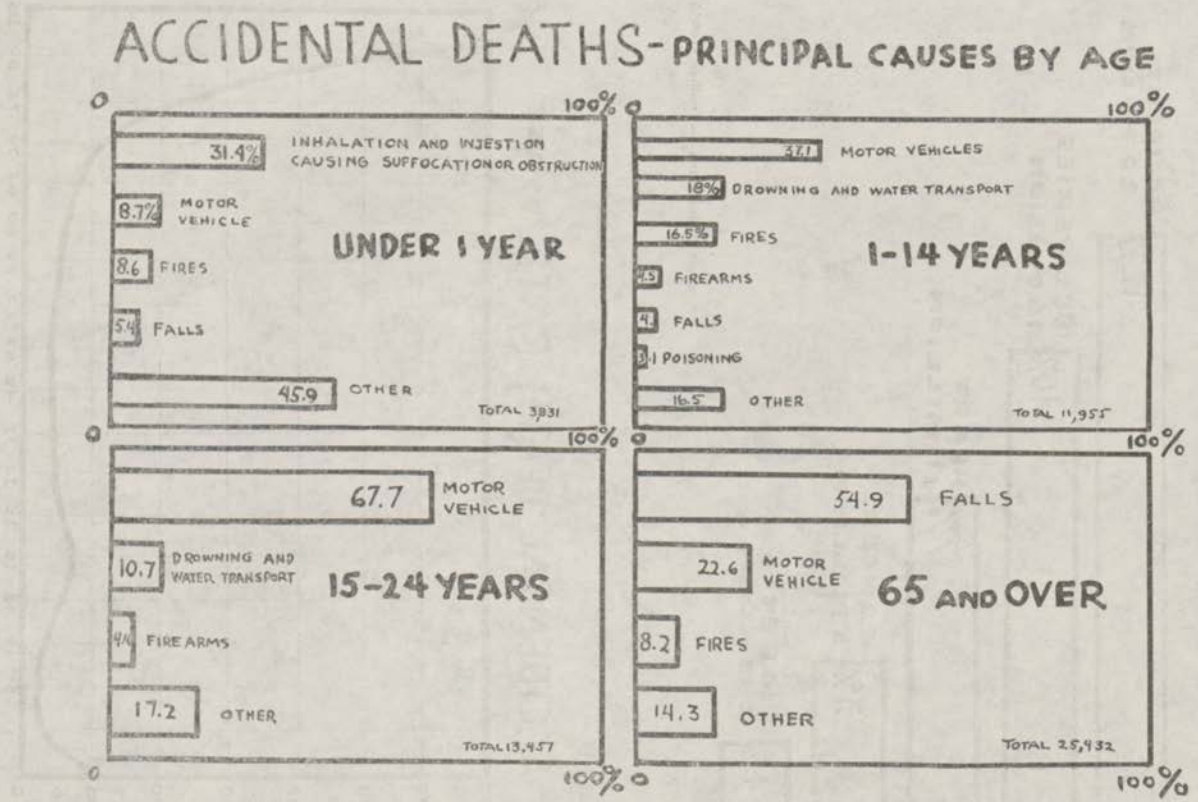


All hospital conditions 167 million -100%

ACCIDENTAL DEATH RATE BY AGE



(PER 100,000 POPULATION)


ACCIDENTAL DEATHS-PRINCIPAL CAUSES BY AGE
0
100%
31.4% INHALATION AND INJESTION CAUSING SUFFOCATION OR OBSTRUCTION
8.7% MOTOR VEHICLE
8.6 FIRES
5.4 FALLS
45.9 OTHER
UNDER 1 YEAR
TOTAL 3831
37.1 MOTOR VEHICLES
18% DROWNING AND WATER TRANSPORT
16.5% FIRES
4.3 FIREARMS
4 FALLS
3.1 POISONING
16.5 OTHER
1-14 YEARS
TOTAL 11,955
67.7 MOTOR VEHICLE
10.7 DROWNING AND WATER TRANSPORT
4.4 FIREARMS
17.2 OTHER
15-24 YEARS
TOTAL 13,457
54.9 FALLS
22.6 MOTOR VEHICLE
8.2 FIRES
14.3 OTHER
65 AND OVER
TOTAL 25,932

Mr. ROBERTS. Thank you.

Mr. COHEN. This focus of Service interest and program activity lies in the importance of scientific research as the basis for planning and developing effective accident prevention measures—and particularly research relating to the human factors in accidents and in accident prevention.

I do not mean to imply that accident-prevention research is an entirely new or recent concept. Much valuable work has been done in some fields for many years.

For the most part, however, this research has concentrated on making things relatively safe for humans to use. This includes research into the design of equipment and materials to reduce their inherent hazards for humans.

Of course, as I implied, a lot more needs to be done in that area. However, regretfully, not as much attention has been given to human behavior that causes or invites accidents. Yet, those who have studied accident prevention believe that the principal cause of accidents is human behavior.

Until recently the importance of human factors has been reflected primarily in campaigns designed to make people "safety minded" through training and education. Many of these campaigns have had beneficial results.

Unfortunately, the scientific data on which effective campaigns or other preventive measures can be based is limited at present. We need a great deal more research into the physiological, psychological, and environmental factors that make people act as they do.

What is particularly needed is an interdisciplinary research effort that will combine and coordinate the skills of research specialists in the various health sciences.

Among these sciences are pediatrics, geriatrics, preventive medicine, physical medicine, biomathematics (including computer programing), physiology (particularly stress physiology), and behavioral sciences.

Some facts we need are already being uncovered by basic and applied research into the sciences related to health. But, these findings must be analyzed and related to the requirements of accident prevention. In addition, we have recently begun to see the rich potential available in health and related research institutions for studies directed specifically toward major causes or forms of accidental death and injury.

In some instances, effective research will require special equipment or facilities. This is particularly true where the researcher needs to observe human behavior in very dangerous situations.

By stimulating the actual performance situations, we can make these tests without danger to the participants. An example, which has previously been discussed with your committee, is the need for a high fidelity driving simulator in research directed toward the causes of traffic accidents.

Such a simulator would allow us to put many drivers through identical tasks and individual drivers through a variety of tasks. The hazards to the test drivers and others, which would be unavoidable if this were attempted in actual traffic situations, could be eliminated.

Such a device would help us analyze the effects of driving under varying conditions, such as the influence of drugs, alcohol, fatigue, and other physiological factors. Thus, we could:

Substitute scientific facts for the subjective opinions which must govern our attitudes toward these factors today;

Discover whatever actual limitations on driving ability might be imposed by various chronic or acute diseases or other physical disabilities; and

Test the effects of such physiological and psychological factors as attitudes, emotions, and other motivational factors; and, study intensively the interactions that take place between the driver, the vehicle, the roadway, and other aspects of the environment.

In addition to automotive safety, which has deservedly received a major share of public concern, there are many other fields of accident prevention which deserve increased attention and in which sound research could lend, in our opinion, to the saving of many lives and the prevention of many crippling injuries.

Accidents in the home constitute another problem area in which research should yield beneficial results. These include such common mishaps as falls, electrical shock, burns, and wounds inflicted by knives, firearms, and utensils.

Here too, a variety of physiological, psychological, and environmental factors appears to be involved which we have lacked the research capability to explore adequately.

We also need to investigate such lifesaving techniques as resuscitation, proper storage of household medicines and other substances, and safer occupancy of the various kinds of human habitation.

With the increasing amount of leisure time available to the average American, we have witnessed an increasing number of deaths and injuries among those who engage in skiing, skin and scuba diving, hunting and camping, swimming and boating, amateur and professional sports like baseball and football, and boxing, I will add, and even gymnastics.

Public knowledge and use of the technique known as "drown-proofing" could probably save many lives, among both swimmers and nonswimmers.

These are only a few illustratons of areas in which scientific research can open the way to progress in accident prevention. I hardly need add that such research—like research in other fields—must later be translated into programs of action before its full value can be realized.

This will require such intervening mechanisms and procedures as to the publication and dissemination of research findings, the conduct of experimental and demonstration programs, and the training of personnel in new accident-prevention concepts and techniques.

This brief projection of the needs and opportunities for research in accident prevention indicates the primary focus of accident-prevention interest and planning within the Public Health Service.

Before we continue, let me say that the Public Health Service itself cannot and should not conduct all needed research, nor is this a field in which miraculous results can be quickly achieved.

On the contrary, this is an area where the talents, resources, and interests of many agencies—both governmental and voluntary—can contribute to a common goal, and many years will pass before some of our most difficult accident-prevention problems can be solved.

The interest and purpose of the Public Health Service are to make certain that its own intramural research potential—and the potential of its programs for the stimulation and support of research by non-Federal agencies and organizations—will be fully utilized in a broad attack on accidental deaths and injuries.

I would like to ask your permission, Mr. Chairman, to insert something in the record here. We have compiled some new statistical evidence with regard to the accident problem which I think your committee might find of value.

Mr. ROBERTS. Without objection that will be included in the record.

(The material referred to follows:)

THE ACCIDENT PROBLEM IN BRIEF

Accidents leading cause of death for persons 1 to 35 years of age

Number of accidental deaths (1960)	93, 806
Persons injured annually	45, 000, 000
Persons bed disabled by injury	10, 227, 000
Persons receiving medical care for injuries	37, 671, 000
Persons hospitalized by injuries	1, 979, 000
Days of restricted activity	459, 963, 000
Days of bed disability	113, 539, 000
Days of work loss	83, 773, 000
Days of school loss	11, 894, 000
Number of emergency room visits	10, 000, 000
Number of hospital bed days	20, 000, 000
Hospital beds required for treatment	50, 000
Hospital personnel required for treatment	68, 000
Annual cost of accidents	$14, 500, 000, 000

EXTENT OF THE PROBLEM

Deaths

Today accidents are the leading cause of death between ages 1 and 35. In this age span, far more people die from accidents each year than from any of the other leading causes, such as heart disease, cancer, or influenza and pneumonia.

There are about 90,000 accidental deaths each year. Almost 75 percent of these deaths are from one of the four leading types of accidents: Motor vehicle accidents cause about 40 percent; falls cause about 20 percent; fire and explosion cause about 7 percent; drowning causes about 5 percent.

Approximately 3 million man-years of life are lost each year because of accidental deaths.

Nonfatal injuries

About 45 million persons (more than 1 person in 4) are injured annually according to the U.S. National Health Survey.

Of those injured each year about 19 million are injured in and about the home. Motor vehicles injure 4 million, and 8 million are injured while at work.

Of those who are injured, about 37 million receive medical care and 10 million are bed disabled.

Disability

Annual losses resulting from injury include about 400 million days of restricted activity and about 100 million days of bed disability.

Costs

The National Safety Council estimates that accidents cost $13.6 billion in 1960. Of this total, $8.1 billion was attributable to injuries resulting from accidents.

Persons injured by accidents impose a heavy burden on our hospital facilities. The number of emergency room visits is estimated at 10 million and about 1.7 million persons are hospitalized for treatment of injury each year. Each year accidents result in about 16.5 million hospital bed-days and require the equivalent of about 50,000 hospital beds and 68,000 full-time personnel.

Accidents and Our Health—A Brief Statistical Summary

How accidents affect the nation's health

Accidental deaths

Accidents are fourth among the leading causes of death in the United States. Only heart disease, cancer, and vascular lesions of the central nervous system take more lives. About 3 million man-years of life were lost because of accidents in 1958.

Among young people 1 to 35 years of age, accidents are the leading cause of death. In the age group 15 to 24 years they caused more than one-half of all deaths in 1959.

There were 92,080 accidental deaths in 1959. The death rate for accidents was 52.2 per 100,000 population. Almost 75 percent of these deaths were from one of the four leading types of accidents: Motor-vehicle accidents caused more than 40 percent (37,910 deaths); falls caused more than 20 percent (18,774 deaths); fire and explosion caused about 7 percent (6,898 deaths); drowning caused about 5 percent (5,046 deaths).

Nonfatal injuries

About 45 million persons are injured annually according to the U.S. National Health Survey. (Based on 3 survey years, July 1957–June 1960.)

More than one person in four is injured annually. (Based on 2 survey years, July 1957–June 1959.)

Of those who are injured, about 37 million receive medical care, 10 million are bed disabled, and 1.7 million are hospitalized. (Based on data for various survey years.)

Annual losses resulting from these injuries include about 400 million days of restricted activity, about 100 million days of bed disability, and about 100 million days lost from work. (Based on the survey year, July 1957–June 1958.)

Motor vehicle accidents and the nation's health

Deaths

Motor vehicle accidents caused the death of 37,910 persons in the United States in 1959. The death rate for such accidents was 21.5 per 100,000 population. In 1958 about 1.4 million man-years of life were lost as a result of motor vehicle accidents.

Death from motor vehicle accidents is much more common among males than among females. Male death rates were almost three times as high as female death rates in 1959. (For the 20–24 year age group, male death rates were five times as high as female death rates.)

About four-fifths of all the motor vehicle deaths in 1959 occurred among male youths aged 15–24.

There were 7,282 pedestrians among those killed by motor vehicles in 1959. Males aged 65 and over accounted for almost one-fourth of these, although they constitute less than 4 percent of the population.

Nonfatal injuries

The National Health Survey estimates that about 4 million persons are injured annually in motor vehicle accidents. (Based on 3 survey years, July 1957–June 1960.)

More than one-fourth of all these injuries occurred to persons 15–24 years of age—the age group with the highest rates. (Based on 2 survey years, July 1957–June 1959.)

More than one-half of those hospitalized by injuries are injured by motor vehicles. (Based on the survey year July 1957–June 1958.)

Among the annual losses due to motor vehicle accidents are about 90 million days of restricted activity, more than 25 million days of bed disability and about 30 million days lost from work. (Based on the survey year July 1957–June 1958.)

How accidents affect the health of children

Deaths

Accidents are the leading cause of death in childhood, after the first year of life. About 15,000 children die each year in an accident.

Accidental deaths are almost 30 percent of all deaths for ages 1 to 4, and about 40 percent for ages 5 to 14.

Motor vehicle accidents, drowning, and fire and explosion are the most common types of fatal accidents in childhood. Together they cause more than half of the accidental death toll.

Nonfatal injuries

The National Health Survey estimates that about 16 million children are injured each year. About one-third of all persons injured are children under 15. (Based on 2 survey years, July 1957–June 1959.)

About 60 percent of these children are injured in and about the home. (Based on 2 survey years, July 1957–June 1959.)

One child in every ten hospitalized, is there because of an injury. More than 200,000 children have impairments caused by injury. (Based on the survey year, July 1957–June 1958.)

Injured children experience more than 40 million days of restricted activity and 10 million days of bed-disability annually. About 13 million schooldays are lost each year because of injuries. (Based on the survey year, July 1957–June 1958.)

HOW ACCIDENTS AFFECT THE HEALTH OF THE AGED

Deaths

There were 24,845 accidental deaths among persons 65 and over in 1959. The accidental death rate for these aged persons was 161.6 per 100,000 population—more than three times the rate for all ages.

Although less than 10 percent of the population was 65 or over in 1959, more than one-fourth of the accidental deaths occurred among this age group. They experienced almost three-fourths of all fatal falls, almost one-third of all pedestrian deaths, and more than one-fourth of the deaths from fire and explosion.

For older people, falls, motor vehicle accidents and fire and explosion are the most common types of accidental death. Together they casued about 85 percent of all accidental deaths of those 65 and over in 1959.

Nonfatal injuries

About 3 million older persons are injured annually, according to National Health Survey estimates. (Based on 2 survey years, July 1957–June 1959.)

Over two-thirds of these injuries occur in and about the home. (Based on 2 survey years, July 1957–June 1959.)

Injury rates for older women are twice as high as those for older men. (Based on 2 survey years, July 1957–June 1959.)

HOME ACCIDENTS AND THE NATION'S HEALTH

Deaths

Accidents in and about the home caused more than one-fourth of all accidental deaths in 1959. There were 23,020 deaths from such accidents reported, and the total number is estimated to be as high as 28,000 annually (including an estimate for deaths with place not reported.)

The home and its premises are the scene of almost two-thirds of all accidental deaths of children under 5, and almost one-half of the accidental deaths of persons 65 and over.

Accidents in the home are responsible for more than three-fourths of all deaths from fire and explosion, almost two-thirds of those from poisonous gases and vapors, and about one-half of the deaths from falls, solid and liquid poisons, and firearm accidents.

Nonfatal injuries

About 19 million persons are injured in and about their homes each year, according to National Health Survey estimates. (Based on 3 survey years, July 1957–June 1960.)

Each year these accidents injure twice as many persons as work accidents and four times the number injured in motor vehicle accidents. (Based on 3 survey years, July 1957–June 1960.)

Children and aged persons have the highest home injury rates. Among children, boys have higher rates than girls. Women 65 years and over have rates much higher than men of the same age. (Based on 2 survey years, July 1957–June 1959.)

Deaths and death rates for the leading types of accidents, United States, 1959

Type of accident	Number of deaths	Rate per 100,000 population
All types	92,080	52.2
Motor vehicle	37,910	21.5
Falls	18,774	10.6
Fire and explosion	6,898	3.9
Drowning	5,046	2.9
Firearm	2,258	1.3
Inhalation and ingestion [1]	2,189	1.2
Machinery	1,970	1.1
All other types	17,035	9.7

[1] Inhalation and ingestion causing obstruction or suffocation.

Accidental deaths and death rates by age, United States, 1959

Age	Number of deaths	Rate per 100,000 population
All ages	92,080	52.2
Under 5	8,748	44.2
5 to 14	6,511	18.5
15 to 24	13,269	56.0
25 to 44	19,666	42.3
45 to 64	18,937	52.8
65 and over	24,845	161.6
Not stated	104	----------

Source: Deaths—Vital Statistics of the United States, 1959—National Office of Vital Statistics. Populations—Current Population Reports, Bureau of the Census series P-25, No. 212.

Leading types of accidental death by age and sex, United States, 1959

	All types	Motor vehicle	Falls	Fire and explosion [1]	Drowning	Firearm	Inhalation and ingestion [2]	Machinery	All other types
All ages	92,080	37,910	18,774	6,898	5,046	2,258	2,189	1,970	17,035
Male	63,639	28,064	9,303	3,937	4,279	1,976	1,325	1,901	12,854
Female	28,441	9,846	9,471	2,961	767	282	864	69	4,181
Under 5	8,748	1,842	521	1,274	727	93	1,385	71	2,835
Male	4,980	1,024	336	656	481	58	801	50	1,574
Female	3,768	818	185	618	246	35	584	21	1,261
5 to 14	6,511	2,719	184	753	1,204	449	63	135	1,004
Male	4,644	1,850	130	315	1,011	396	38	123	781
Female	1,867	869	54	438	193	53	25	12	223
15 to 24	13,269	8,969	274	331	1,064	602	39	224	1,766
Male	11,015	7,257	249	215	988	539	35	217	1,515
Female	2,254	1,712	25	116	76	63	4	7	251
25 to 44	19,666	10,358	1,085	1,172	935	558	155	619	4,784
Male	15,855	8,096	867	804	848	479	100	605	4,056
Female	3,811	2,262	218	368	87	79	55	14	728
45 to 64	18,937	8,263	2,922	1,472	743	422	255	694	4,166
Male	14,233	5,936	2,142	904	635	384	166	681	3,385
Female	4,704	2,327	780	568	108	38	89	13	781
65 and over	24,845	5,727	13,777	1,890	347	133	291	226	2,454
Male	12,822	3,876	5,570	1,037	292	119	185	224	1,519
Female	12,023	1,851	8,207	853	55	14	106	2	935
Not stated	104	32	11	6	26	1	1	1	26
Male	90	25	9	6	24	1	----------	1	24
Female	14	7	2	----------	2	----------	1	----------	2

[1] Fire and explosion of combustible material.
[2] Inhalation and ingestion causing obstruction or suffocation.

Source: Vital Statistics of the United States, 1959, National Office of Vital Statistics.

Death rates for the leading types of accidental death by age and sex; United States, 1959

[Rates per 100,000 population]

	All types	Motor vehicle	Falls	Fire and explosion [1]	Drowning	Firearm	Inhalation and ingestion [2]	Machinery	All other types
All ages	52.2	21.5	10.6	3.9	2.9	1.3	1.2	1.1	9.7
Male	73.2	32.3	10.7	4.5	4.9	2.3	1.5	2.2	14.8
Female	31.8	11.0	10.6	3.3	.9	.3	1.0	.1	4.7
Under 5	44.2	9.3	2.6	6.4	3.7	.5	7.0	.4	14.3
Male	49.4	10.2	3.3	6.5	4.8	.6	7.9	.5	15.6
Female	38.8	8.4	1.9	6.4	2.5	.4	6.0	.2	13.0
5 to 14	18.5	7.7	.5	2.1	3.4	1.3	.2	.4	2.9
Male	25.9	10.3	.7	1.8	5.6	2.2	.2	.7	4.4
Female	10.9	5.1	.3	2.5	1.1	.3	.1	.1	1.3
15 to 24	56.0	37.8	1.2	1.4	4.5	2.5	.2	.9	7.5
Male	93.5	61.6	2.1	1.8	8.4	4.6	.3	1.8	12.9
Female	18.9	14.4	.2	1.0	.6	.5	0	.1	2.1
25 to 44	42.3	22.3	2.3	2.5	2.0	1.2	.3	1.3	10.3
Male	69.7	35.6	3.8	3.5	3.7	2.1	.4	2.7	17.8
Female	16.0	9.5	.9	1.5	.4	.3	.2	.1	3.1
45 to 64	52.8	23.1	8.2	4.1	2.1	1.2	.7	1.9	11.6
Male	81.8	34.1	12.3	5.2	3.6	2.2	1.0	3.9	19.4
Female	25.5	12.6	4.2	3.1	.6	.2	.5	.1	4.2
65 and over	161.6	37.2	89.6	12.3	2.3	.9	1.9	1.5	16.0
Male	184.1	55.6	80.0	14.9	4.2	1.7	2.7	3.2	21.8
Female	142.9	22.0	97.6	10.1	.7	.2	1.3	0	11.1

[1] Fire and explosion of combustible material.
[2] Inhalation and ingestion causing obstruction or suffocation.

Sources: "Vital Statistics of the United States, 1959" and "Current Population Reports," Series P-25, No. 212, Bureau of the Census.

Persons injured: [1] *Estimated number by class of accident and extent of disability—United States annual average, July 1957–June 1960*

[Numbers in thousands]

Extent of disability	Class of accident				
	Total [2]	Motor vehicle [3]	Work [3]	Home	Other
Total persons injured	45,187	4,388	8,250	19,068	13,481
With activity restriction (medically attended or not)	26,333	2,719	3,920	10,988	8,706
Bed disabling	10,350	1,370	1,350	4,090	3,540
Medically attended	8,030	1,224	1,069	3,066	2,671
Not medically attended	2,320	146	281	1,024	869
Not bed disabling	15,983	1,349	2,570	6,898	5,166
Medically attended	10,143	953	1,898	4,009	3,283
Not medically attended	5,840	396	672	2,889	1,883
Without activity restriction (medically attended)	18,854	1,669	4,330	8,080	4,775

[1] These estimates are based upon 3 years of a continuing sample survey of the civilian noninstitutional population residing in the United States. Estimates are based on interviews of a minimum of 36,000 households containing approximately 115,000 persons per year. Each statistic is adjusted to official U.S. Bureau of the Census population figures to make the sample estimates closely representative of the total population by age, sex, color, and residence. Persons injured include only those persons experiencing injuries causing 1 or more days of restricted activity or requiring medical attention. For further description and qualifications see "Health Statistics From the U.S. National Health Survey," series B-8.
[2] Figures may not add to totals shown because of rounding.
[3] "Motor vehicle" here includes all accidents in which a motor vehicle was involved regardless of whether the vehicle was in motion or standing still, i.e., persons injured while working on vehicles and pedestrians struck by moving vehicles are both included. "At work" includes all accidents occurring while the person was at work at his job or business, except those accidents involving motor vehicles.

Source: U.S. National Health Survey.

Persons injured:[1] *Estimated numbers by age, sex and class of accident—United States, annual average, July 1957–June 1959*

[Numbers in thousands]

Age and sex	Class of accident				
	Total[2]	Motor vehicle[3]	At work[3]	Home	Other and unknown
All ages	46,388	4,173	8,264	19,960	13,992
Male	26,811	2,839	6,783	9,363	7,827
Female	19,577	1,334	1,481	10,598	6,165
Under 5	5,622	130	(4)	4,089	1,404
Male	3,636	77	(4)	2,816	744
Female	1,986	53	(4)	1,273	661
5 to 14	10,763	432	89	5,644	4,599
Male	6,592	264	59	3,585	2,685
Female	4,171	168	31	2,059	1,914
15 to 24	6,756	1,073	1,415	1,594	2,675
Male	4,333	716	1,162	626	1,830
Female	2,423	357	254	968	845
25 to 44	11,788	1,491	4,122	3,472	2,704
Male	7,093	1,126	3,486	995	1,486
Female	4,695	365	635	2,478	1,218
45 to 64	8,109	865	2,381	2,870	1,993
Male	4,233	559	1,871	808	995
Female	3,876	306	510	2,062	998
65 and over	3,352	184	258	2,293	618
Male	925	98	205	534	88
Female	2,428	86	53	1,760	530

[1] These estimates are based upon 2 years of a continuing sample survey of the civilian noninstitutional population residing in the United States. Estimates are based on interviews of a minimum of 36,000 households containing approximately 115,000 persons per year. Each statistic is adjusted to official U.S. Bureau of the Census population figures to make the sample estimates closely representative of the total population by age, sex, color, and residence. Persons injured include only those persons experiencing injuries causing one or more days of restricted activity or requiring medical attention. For further description and qualifications see "Health Statistics From the U.S. National Health Survey," Series B–8.

[2] Figures may not add to totals shown because of rounding.

[3] "Motor vehicle" here includes all accidents in which a motor vehicle was involved regardless of whether the vehicle was in motion or standing still, i.e., persons injured while working on vehicles and pedestrians struck by moving vehicles are both included. "At work" includes all accidents occurring while the person was at work at his job or business, except those accidents involving motor vehicles.

[4] Not applicable.

Source: Unpublished data from the U.S. National Health Survey.

Persons injured: [1] *Estimated rates by age, sex, and class of accident—United States, annual average, July 1957–June 1959*

[Rates per 1,000 persons per year]

Age and sex	Class of Accident				
	Total [2]	Motor vehicle [3]	At work [3]	Home	Other and unknown
All ages	273.1	24.6	48.6	117.5	82.4
Male	324.5	34.4	82.1	113.3	94.7
Female	224.5	15.3	17.0	121.5	70.7
Under 5	288.3	6.7	(4)	209.7	72.0
Male	366.1	7.8	(4)	283.5	74.9
Female	207.6	5.5	(4)	133.1	69.1
5 to 14	318.4	12.8	2.6	167.0	136.0
Male	382.2	15.3	3.4	207.8	155.7
Female	251.9	10.1	1.9	124.4	115.6
15 to 24	313.9	49.9	65.7	74.1	124.3
Male	431.1	71.2	115.6	62.3	182.1
Female	211.2	31.1	22.1	84.4	73.7
25 to 44	258.6	32.7	90.4	76.2	59.3
Male	324.6	51.5	159.5	45.5	68.0
Female	197.9	15.4	26.8	104.4	51.3
45 to 64	233.3	24.9	68.5	82.6	57.3
Male	251.1	33.2	111.0	47.9	59.0
Female	216.5	17.1	28.5	115.2	55.7
65 and over	228.5	12.5	17.6	156.3	42.1
Male	138.3	14.7	30.7	79.9	13.2
Female	304.3	10.8	6.6	220.6	66.4

[1] These estimates are based upon 2 years of a continuing sample survey of the civilian noninstitutional population residing in the United States. Estimates are based on interviews of a minimum of 36,000 households containing approximately 115,000 persons per year. Each statistic is adjusted to official U.S. Bureau of the Census population figures to make the sample estimates closely representative of the total population by age, sex, color, and residence. Persons injured include only those persons experiencing injuries causing 1 or more days of restricted activity or requiring medical attention. For further description and qualifications see "Health Statistics From the U.S. National Health Survey," Series B-8.

[2] Figures may not add to totals shown because of rounding.

[3] "Motor vehicle" here includes all accidents in which a motor vehicle was involved regardless of whether the vehicle was in motion or standing still, i.e., persons injured while working on vehicles and pedestrians struck by moving vehicles are both included. "At work" includes all accidents occurring while the person was at work at his job or business, except those accidents involving motor vehicles.

[4] Not applicable.

Source: Calculated from unpublished data provided by the U.S. National Health Survey.

COST OF ACCIDENTS

The National Safety Council estimates that accidents cost $13.6 billion in 1960. Of this total, $8.1 billion was attributable to injuries resulting from accidents, broken down as follows:

Wage loss	$4, 100, 000, 000
Medical expense	1, 000, 000, 000
Overhead cost of insurance	3, 000, 000, 000

In addition to these injury costs, property damage in motor vehicle accidents cost an estimated $2.2 billion, property destroyed by fire amounts to $1.1 billion, and property damage and loss of production caused by work accidents cost $2.2 billion.

The total amount of compensation paid under workmen's compensation laws in 1959 was about $1.2 billion. Of this amount about $400 million was for medical and hospital costs, and about $800 million for wage compensation.

Nonfatal injuries result in the loss of about 100 million workdays annually.

Persons injured by accidents impose a heavy burden on our hospital facilities. The number of emergency room visits is estimated at 10 million and about 1.7 million persons are hospitalized for treatment of injury each year. Each year accidents result in about 16.5 million hospital bed-days and require the equivalent of about 50,000 hospital beds and 68,000 full-time personnel.

Accidental death rates by State, United States, 1959

[Rates per 100,000 population]

[United States: [1] Number of deaths, 92,080; rate, 52.2]

Rank and State	Rate	Number of deaths	Rank and State	Rate	Number of deaths
1. Alaska	115.2	220	26. Washington	56.7	1,602
2. Nevada	89.6	251	27. Nebraska	55.5	808
3. New Mexico	86.0	756	28. Iowa	55.4	1,556
4. Wyoming	84.3	269	29. Indiana	55.2	2,561
5. Montana	83.7	575	30. North Carolina	55.0	2,493
6. Arizona	73.8	910	31. Tennessee	54.8	1,919
7. Idaho	70.6	469	32. Utah	54.2	477
8. Mississippi	70.0	1,530	33. California	53.2	7,787
9. Oklahoma	67.8	1,542	34. Minnesota	52.8	1,794
10. Arkansas	67.7	1,181	35. Virginia	52.1	2,079
11. South Dakota	64.2	441	36. Maine	51.0	484
12. Alabama	62.9	2,009	37. Wisconsin	50.0	2,005
13. South Carolina	62.8	1,517	38. District of Columbia	49.8	418
14. Oregon	62.3	1,101	39. Ohio	49.0	4,749
15. Louisiana	61.5	1,946	40. New Hampshire	48.8	289
16. Vermont	61.0	227	41. Massachusetts	48.2	2,386
17. Missouri	60.8	2,581	42. Maryland	45.8	1,388
18. North Dakota	59.8	384	43. Michigan	45.8	3,645
19. Georgia	59.5	2,284	44. Pennsylvania	45.0	5,101
20. Kentucky	58.8	1,838	45. Delaware	43.2	196
21. Colorado	58.6	986	46. Illinois	42.7	4,359
22. West Virginia	58.5	1,149	47. New York	41.4	6,832
23. Kansas	58.4	1,249	48. New Jersey	38.4	2,277
24. Florida	57.9	2,756	49. Connecticut	37.7	910
25. Texas	57.8	5,501	50. Rhode Island	33.5	293

[1] Data for total United States includes Alaska but excludes Hawaii.

Source: Deaths, Vital Statistics of the United States, 1959, NOVS. Population, Current Population Reports, series P. 25, No. 210, Bureau of the Census.

Death rates from motor vehicle accidents by State, United States, 1959

[Rates per 100,000 population]

[United States: [1] Number of deaths, 37,910; rate, 21.5]

Rank and State	Rate	Number of deaths	Rank and State	Rate	Number of deaths
1. Nevada	48.2	135	26. Indiana	23.9	1,109
2. New Mexico	43.5	382	27. Tennessee	23.9	837
3. Wyoming	41.7	133	28. Missouri	23.8	1,010
4. Montana	36.1	248	29. Florida	23.6	1,124
5. Arizona	35.7	440	30. Vermont	22.3	83
6. Idaho	33.0	219	31. Washington	22.0	620
7. South Dakota	32.5	223	32. Minnesota	21.7	737
8. Alabama	28.2	900	33. Ohio	20.5	1,993
9. Arkansas	28.2	491	34. Wisconsin	20.5	824
10. Oklahoma	28.1	640	35. Virginia	20.2	806
11. Oregon	27.7	489	36. Michigan	19.8	1,575
12. North Carolina	27.4	1,241	37. West Virginia	19.8	390
13. Texas	26.9	2,557	38. New Hampshire	18.9	112
14. South Carolina	26.8	648	39. Maryland	18.0	546
15. Kansas	26.6	570	40. Delaware	17.4	79
16. Mississippi	26.6	582	41. Illinois	16.9	1,724
17. California	26.1	3,823	42. Alaska	16.8	32
18. Utah	26.1	230	43. Pennsylvania	16.3	1,846
19. North Dakota	26.0	167	44. Maine	15.7	149
20. Georgia	25.7	987	45. New York	14.1	2,334
21. Louisiana	25.3	802	46. New Jersey	12.9	764
22. Iowa	25.0	702	47. Massachusetts	12.5	620
23. Colorado	24.4	410	48. Connecticut	12.0	289
24. Kentucky	24.2	755	49. District of Columbia	11.1	93
25. Nebraska	24.1	351	50. Rhode Island	10.2	89

[1] Data for total United States includes Alaska but excludes Hawaii.

Source: Deaths, Vital Statistics of the United States, 1959, NOVS. Population, Current Population Reports, series P. 25, No. 210, Bureau of the Census.

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Death rates from accidents other than motor vehicle accidents by State, United States, 1959

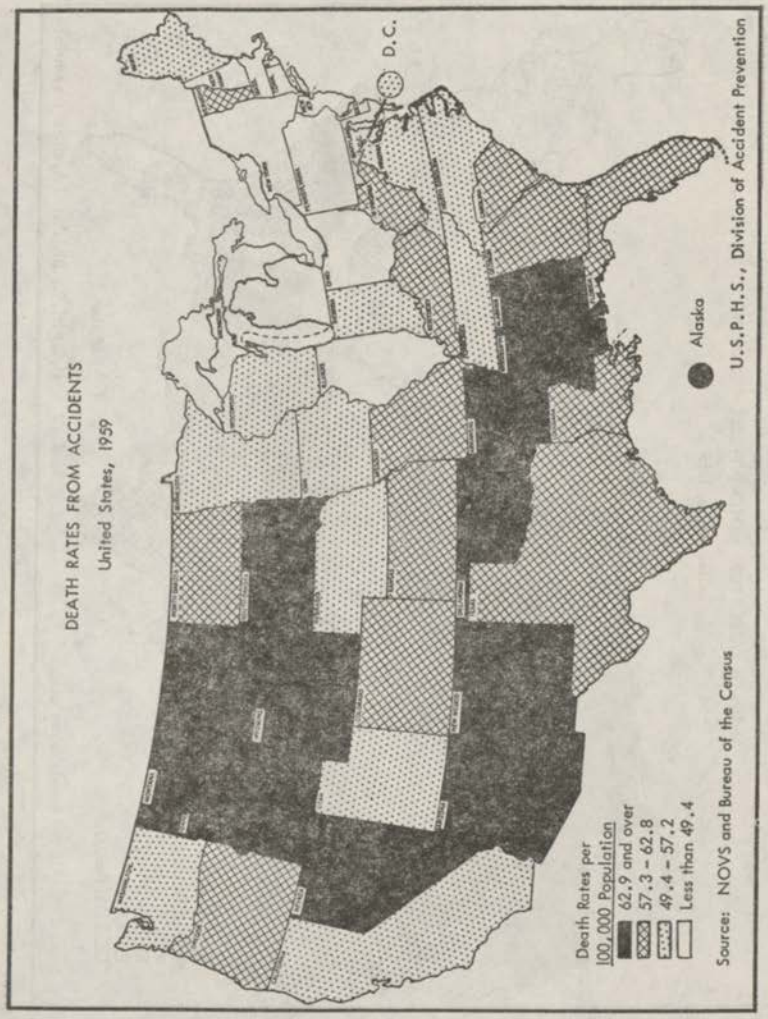
[Rates per 100,000 population]

[United States: [1] Number of deaths, 54,170; rate, 30.7]

Rank and State	Rate	Number of deaths	Rank and State	Rate	Number of deaths
1. Alaska	98.4	188	26. North Dakota	33.8	217
2. Montana	47.6	327	27. Virginia	31.9	1,273
3. Mississippi	43.4	948	28. Kansas	31.8	679
4. Wyoming	42.6	136	29. South Dakota	31.7	218
5. New Mexico	42.5	374	30. Nebraska	31.4	457
6. Nevada	41.4	116	31. Indiana	31.3	1,452
7. Oklahoma	39.7	902	32. Minnesota	31.1	1,057
8. Arkansas	39.5	690	33. Tennessee	30.9	1,082
9. District of Columbia	38.7	325	34. Texas	30.9	2,944
10. Vermont	38.7	144	35. Iowa	30.4	854
11. West Virginia	38.7	759	36. New Hampshire	29.9	177
12. Arizona	38.1	470	37. Wisconsin	29.5	1,181
13. Idaho	37.6	250	38. Pennsylvania	28.7	3,255
14. Missouri	37.0	1,571	39. Ohio	28.5	2,756
15. Louisiana	36.2	1,144	40. Utah	28.1	247
16. South Carolina	36.0	869	41. Maryland	27.8	842
17. Massachusetts	35.7	1,766	42. North Carolina	27.6	1,252
18. Maine	35.3	335	43. New York	27.3	4,498
19. Alabama	34.7	1,109	44. California	27.1	3,964
20. Washington	34.7	982	45. Michigan	26.0	2,070
21. Kentucky	34.6	1,083	46. Delaware	25.8	117
22. Oregon	34.6	612	47. Illinois	25.8	2,635
23. Florida	34.3	1,632	48. Connecticut	25.7	621
24. Colorado	34.2	576	49. New Jersey	25.5	1,513
25. Georgia	33.8	1,297	50. Rhode Island	23.3	204

[1] Data for total United States includes Alaska but excludes Hawaii.

Source: Deaths, Vital Statistics of the United States 1959, NOVS. Population, Current Population Reports, series P. 25, No. 210, Bureau of the Census.


DEATH RATES FROM ACCIDENTS
United States, 1959
D.C.
Alaska
Death Rates per 100,000 Population
62.9 and over
57.3 - 62.8
49.4 - 57.2
Less than 49.4
Source: NOVS and Bureau of the Census
U.S.P.H.S., Division of Accident Prevention

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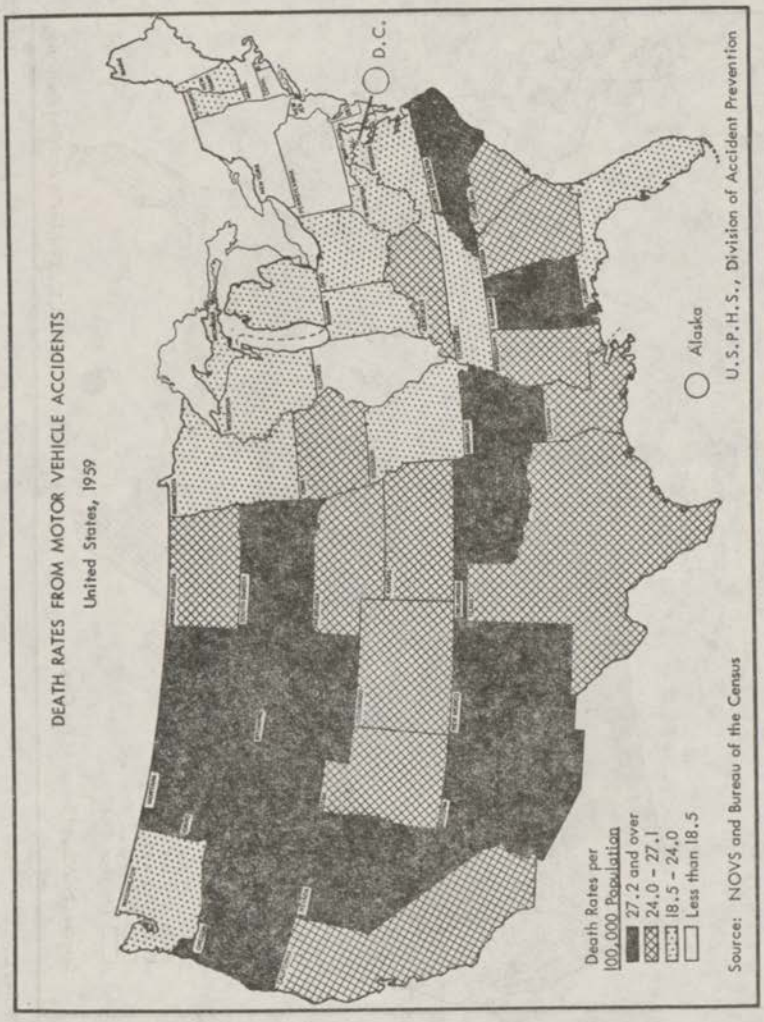
DEATH RATES FROM MOTOR VEHICLE ACCIDENTS
United States, 1959
D.C.
Alaska
Death Rates per 100,000 Population
27.2 and over
24.0 - 27.1
18.5 - 24.0
Less than 18.5
Source: NOVS and Bureau of the Census
U.S.P.H.S., Division of Accident Prevention

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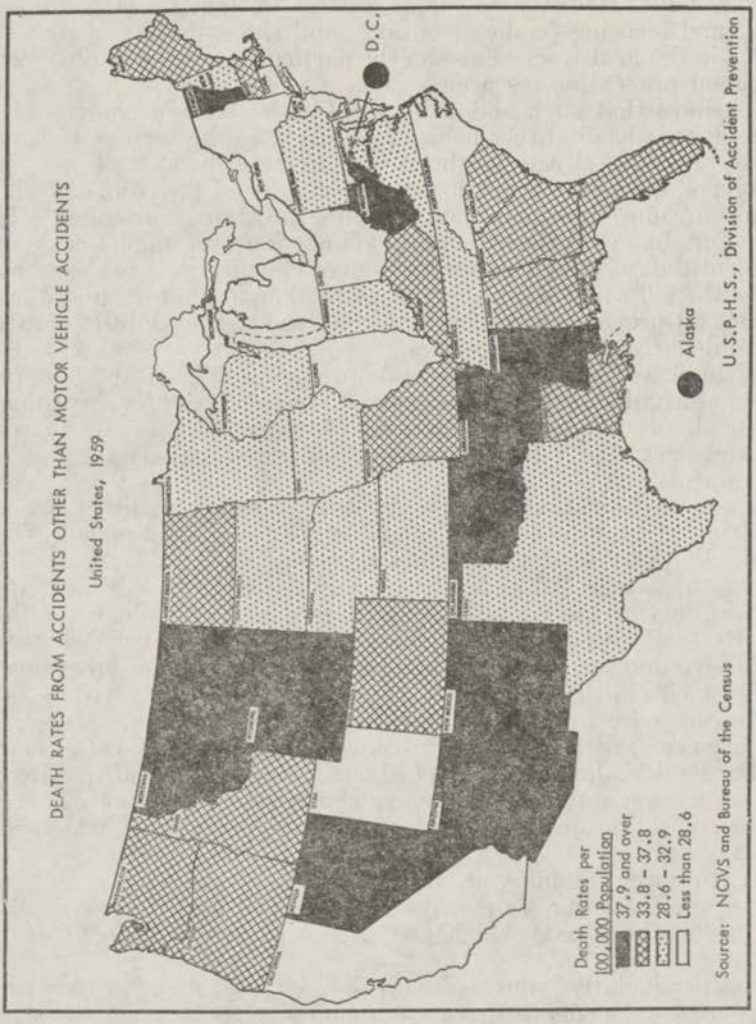
DEATH RATES FROM ACCIDENTS OTHER THAN MOTOR VEHICLE ACCIDENTS
United States, 1959
D.C.
Alaska
Death Rates per 100,000 Population
37.9 and over
33.8 – 37.8
28.6 – 32.9
Less than 28.6
Source: NOVS and Bureau of the Census
U.S.P.H.S., Division of Accident Prevention

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Mr. Chairman, I have undertaken to define in general terms the interests, objectives, and programs of the Service in the field of accident prevention because that—as we interpret it—is the principal purpose of the chairman's bill, H.R. 133.

As was pointed out in our Department's report on the bill, H.R. 133, as written, adds no substantial new program authority to that already available to the Service under existing statutory provisions. I would however, add specificity to some general authorities, thus underscoring and focusing public attention—and the attention of research workers in the health sciences—on the particular needs and objectives of accident-prevention research.

We believe that such action by the Congress could contribute in this field, as it has in other fields of research, to the further advancement of programs already authorized and established.

We have also pointed out in our report several provisions of H.R. 133, as introduced, which would require substantial revision. The only point that we believe requires reiteration and emphasis in this statement today is the need for revision or clarification of those provisions of the bill which might be so construed as to limit or subordinate the accident-prevention research interests and responsibilities of other Federal departments and agencies.

As I indicated earlier in this statement, the field of accident prevention, including accident-prevention research, is very broad and diversified. It requires the resources of many agencies and individuals, and particularly many agencies and individuals in the Federal Government.

No one organization or agency could possibly conduct an all-embracing program of its own or undertake the central planning and coordination of the efforts of other agencies.

Therefore, whole Public Health Service activities in this field could be strengthened through specific legislative emphasis along the lines of H.R. 133, with the amendments proposed, any such legislation should give due recognition to the parallel interests and programs of other agencies in the field.

This concludes my general statement, Mr. Chairman. I shall be glad, however—with the assistance of the Surgeon General, Dr. Terry, and Dr. Paul V. Joliet, the Chief of our Division of Accident Prevention—to answer any questions your committee may have regarding our present and projected activities in this important field, which your bill deals with.

Mr. ROBERTS. Thank you, Mr. Secretary.

We appreciate your statement on this bill. I want to congratulate you too on the charts which you presented for the benefit of the committee.

I was particularly impressed with the fact that it seems that when our youngsters begin to drive automobiles, that is when the curve takes its upward swing, and I wondered if you would agree with that, that apparently when they start to drive automobiles this onset of terrific loss of life seems to make itself known.

Mr. COHEN. Mr. Chairman, you are raising a problem which is very close to my heart. I have three teenagers driving a car at the present time and, of course, as a parent, I am well aware of the anxiety and distress that both my wife and I have each time one of our children drives the car.

As parents we have tried to instill in our children the sense of responsibility in having this death defying vehicle in their hands.

On the other hand, I must admit that not everything is under the control of the particular driver because there are other drivers on the road and there are other obstructions, and so on. I am sure all parents are concerned about this. It is so tragic, as I said, to have children reach the age of 18 or 20 and then see their life snuffed out just as they are ready to embark on their life's work after society has spent years in educating them and their parents have invested so much.

I think it certainly is an area that we ought to do a lot more in. Leaving out the matter of the love and affection for our children, just from the standpoint of economics to the country, a great deal of additional research could be justified in preventing this tremendous loss.

If this driving simulator that we have been talking about in an accident research prevention center could just simply reduce a small part of that loss, I think the return on the investment would be very great.

Perhaps the Surgeon General would like to say something on that.

Dr. TERRY. Mr. Chairman, I think one is struck on repeated occasions by incidences which occur, and just in this morning's paper I think you may have noticed an article about the death of five teenage girls in Baltimore in an automobile accident.

We realize that we will never make automobiles completely safe, but, for instance, in reading this article in the paper, without having any more specific information about it, I was struck with wanting to know what had happened.

The driver was not killed. I believe he was the only occupant of the car who was not killed and after the accident, according to the report in the paper, related that his brakes failed.

Of course, I do not know whether the brakes actually did fail or whether this was a human failure, whether this individual had something wrong with him and he should not have been driving, or whether this was an automobile that had mechanical defects and should not have been allowed on our streets and highways.

I think this is an example of the sort of tragic incidences which occur every day and I think that our experience has shown very well in so many instances, many of them can be prevented by proper studies and application of existing information in the field.

Mr. ROBERTS. Actually, from the standpoint of physical alone, the teenager should be the best driver we have. Wouldn't you agree with that?

Dr. TERRY. That is right, sir. At that age their reflexes are better and from the pure physical standpoint, they should be the best, once they have learned to drive.

Mr. ROBERTS. Doctor, would you think that this type of prevention center would cost a great deal of money, or do you have any cost estimates?

Dr. TERRY. Yes, sir. We have some cost estimates, Mr. Chairman. I think it all depends on what one thinks of in terms of the actual things which are to be incorporated into such a center. For instance, the type of the center that we are thinking of in the research laboratory estimates, it is estimated that such a building would cost in the neighborhood of $8,500,000. This would be facilities to include laboratories for study, an area in which the simulator would be placed.

As I think you are aware, Mr. Chairman, we have received the support from the Congress already to begin the early stages of development and acquisition of a driving simulator. This is a complicated device that has to be developed and it will take several years yet before it will be available, but at the same time through the support of the Congress we have been able to get funds to start on this program, and this would be included in a part of this, as well as track facilities about the building which would be used for studies of the reaction of individuals to practice actual circumstances in driving.

Mr. ROBERTS. Do you contemplate that the simulator would be a part of the Accident Prevention Research Center?

Dr. TERRY. Yes, sir. It would be a very key part, but it would by no means be the entire Center. In other words, there would be many other laboratories of physiological, chemical, and other types which are necessary to support the work around the simulator and to support studies in other areas, such as home accidents, in which one would be able to mockup certain situations and study within such a center.

Mr. ROBERTS. Dollarwise, what do we spend per capita in this field of automotive highway research?

Dr. TERRY. I don't have the exact figures, Mr. Chairman, on the automotive.

Mr. ROBERTS. Do you have them overall?

Dr. TERRY. I have them overall for accident prevention, and, as you realize, this year our budget is $3,660,000 in this area of accident prevention, which represents——

Mr. ROBERTS. About $2. Is it not, per capita?

Dr. TERRY. About 2 cents per capita.

Mr. ROBERTS. Two cents, I mean.

Dr. TERRY. This is in comparison, for instance, to the area of the heart where we are spending 85 cents; cancer, 88 cents; in terms of research, development, and application in those fields.

Mr. ROBERTS. As pointed out, I believe by the Secretary, this field which we are talking about, the field covered in H.R. 133, is now the leading cause of death in the teenage group. You used the figures of what? Fifteen to twenty-four?

Mr. COHEN. Yes; 15 to 24. The motor vehicle was 67.7 percent. Is that the one you had reference to, Mr. Chairman?

Mr. ROBERTS. Yes.

This is a group, I believe, you mentioned, as the group that we will have to look to to draw our future leadership?

Mr. COHEN. That is certainly true. I recall when I was teaching at the University of Michigan that it would appall me, that at the end of the school year after the students had graduated, there would always be three or four traffic deaths that grew out of some kind of celebration or some other event just after these students had graduated, just on the embarkation of their work.

There are many aspects that I think need more research. It is true that there needs to be continuous work on highway safety.

I think another area is the question of the use of alcohol and the kinds of laws that we have with regard to accidents when people are driving under the influence of alcohol.

That is an area of research that needs further work. Studies of the door locks on automobiles has been productive. You can reduce the extent of deaths and injuries by a number of things, including, as

we have seen, seat belts, and improved door locks. I have reason to believe that if we apply ourselves to this matter, we can do so.

One point, Mr. Chairman, was not made in my statement, but I think should be of interest to your subcommittee. The extent to which the State health departments are working on accident prevention is very spotty in the United States at the present time.

We only have 15 States that have a full-time person in their public health departments that is dealing, in a full-time way, with accident prevention. That gives you some rough idea that we are not yet at the point where the States recognize that you have to have people who are working on this all the time.

In 36 other States, we have part-time personnel, and I think that there is a great deal yet that remains to be done to stimulate and encourage the State health departments to undertake this as a more major function of their responsibility.

Mr. ROBERTS. Do you have any figures as to the number of States which require physical examinations of drivers on renewal?

Dr. JOLIET. The most recent to require this was Pennsylvania, sir. I believe Oregon has such a law. We can get a listing for you. Those are the two that I know of offhand.

Mr. ROBERTS. I would like to have you supply that for the record.

(The following material was submitted for the record:)

The accompanying charts indicate:

(*a*) State physical examination requirements for new applicants for driver licensing and renewals (obtained from International Association of Chiefs of Police), and

(*b*) State physical examination requirements for special licensing cases (obtained from American Optical Survey of State Requirements for Motor Vehicle Operators).

State physical examination requirements for new applicants for driver licensing and renewals

	Acuity	Color	Depth	Peripheral	Renewals A.C.D.P.[1]
1. Alabama	Y[2]	Y			
2. Alaska	Y	Y	Y		Y.
3. Arizona	Y				Y.
4. Arkansas	Y	Y	Y	Y	
5. California	Y				Y.
6. Colorado	Y	Y	Y		Y.
7. Connecticut	Y	Y	Y	Y	
8. Delaware	Y	Y	Y		
9. District of Columbia	Y	Y			
10. Florida	Y	Y	Y	Y	
11. Georgia	Y	Y	Y		Y.
12. Hawaii	Y	Y	Y	Y	
13. Idaho	Y	Y	Y	Y	Y.
14. Illinois	Y	Y			Y.
15. Indiana	Y				Y.
16. Iowa	Y	Y	Y	Y	Y.
17. Kansas	Y	Y	Y	Y	
18. Kentucky	Y	Y	Y		
19. Louisiana	Y	Y	Y	Y	Y.
20. Maine	Y	Y	Y	Y	Partial.
21. Maryland	Y	Y	Y	Y	Y.
22. Massachusetts	Y	Y		Y	
23. Michigan	Y	Y	Y		Y.
24. Minnesota	Y	Y	Y	Y	
25. Mississippi	Y	Y	Y	Y	
26. Missouri	Y	Y	Y	Y	
27. Montana	Y	Y	Y		Partial.
28. Nebraska	Y	Y	Y		
29. Nevada	Y	Y	Y		Y.
30. New Hampshire	Y	Y	Y	Y	
31. New Jersey	Y	Y	Y	Y	Partial.
32. New Mexico	Y	Y	Y	Y	Y.
33. New York	Y	Y			
34. North Carolina	Y	Y	Y	Y	Y.
35. North Dakota	Y	Y	Y	Y	Y.
36. Ohio	Y	Y	Y	Y	Y.
37. Oklahoma	Y	Y	Y	Y	Partial.
38. Oregon	Y	Y	Y	Y	Y.
39. Pennsylvania	Y	Y	Y	Y	Y.
40. Rhode Island	Y				Partial.
41. South Carolina	Y	Y			Y.
42. South Dakota	Y	Y	Y		Y.
43. Tennessee	Y	Y	Y	Y	
44. Texas	Y	Y	Y	Y	Partial.
45. Utah	Y	Y	Y		Y.
46. Vermont	Y	Y	Y	Y	Y.
47. Virginia	Y	Y	Y	Y	Y.
48. Washington	Y	Y	Y	Y	Partial.
49. West Virginia	Y	Y			
50. Wisconsin	Y	Y	Y		Partial.
51. Wyoming	Y	Y			
52. Guam					
53. Puerto Rico	Y	Y	Y	Y	Y.
54. Virgin Islands					

[1] A—Acuity. C—Color. D—Depth. P—Peripheral.
[2] Y—Yes.

State physical examination requirements for special licensing cases

	After certain age	Physical limitation	After convicted of negligence	After complaint	After suspension	After revocation	Accident repeaters
1. Alabama				X		X	
2. Alaska	Over 70	X	X			X	X
3. Arizona	Over 65	X	X	X	X	X	X
4. Arkansas			X	X			
5. California	X	X	X	X	X	X	X
6. Colorado		X	X	X	X	X	X
7. Connecticut			X	X	X	X	X
8. Delaware			X	X		X	X
9. District of Columbia	Over 65	X	X	X	X	X	X
10. Florida			X	X	X	X	X
11. Georgia		X	X	X	X	X	X
12. Hawaii		X	X	X	X	X	X
13. Idaho		X					
14. Illinois	Over 70	X		X	X	X	X
15. Indiana	Over 75	X		X			X
16. Iowa		X	X	X	X	X	X
17. Kansas		X	X	X	X	X	X
18. Kentucky		X	X	X	X	X	X
19. Louisiana		X				1 year	X
20. Maine	Over 80	X	X	X	X	X	X
21. Maryland	Over 70	X	X	X	X	X	X
22. Massachusetts		X	X			X	X
23. Michigan		X		X		X	
24. Minnesota		X	X	X	X	X	X
25. Mississippi			X	X	X	X	X
26. Missouri		X		X		X	
27. Montana		X	X	X	X	X	X
28. Nebraska			X	X	X	X	X
29. Nevada		X	X	X	X	X	X
30. New Hampshire	Over 80	X		X			X
31. New Jersey		X	X	X	X	X	X
32. New Mexico		X	X	X		X	X
33. New York		X	X	X	X	X	X
34. North Carolina		X	X	X	X	X	X
35. North Dakota	Over 70	X	X	X	X	X	X
36. Ohio		X	X	X	X	X	X
37. Oklahoma		X	X	X	X	X	X
38. Oregon		X		X		X	X
39. Pennsylvania [1]	1st license	X		X			X
40. Rhode Island	Over 70						X
41. South Carolina		X	X	X	X	X	X
42. South Dakota	X	X	X	X	X	X	X
43. Tennessee				X	X	X	
44. Texas		X		X		X	X
45. Utah						X	X
46. Vermont	X	X	X	X	X	X	X
47. Virginia		X	X	X			
48. Washington		X		X			X
49. West Virginia		X	X	X	X	X	
50. Wisconsin		X		X			X
51. Wyoming							
52. Guam							
53. Puerto Rico							
54. Virgin Islands							

[1] Pennsylvania periodical physical examination suspended pending legislative review.

Dr. TERRY. Mr. Chairman, I would like to mention in relation to the figures that Mr. Cohen gave you here, you might notice that there were 51—15 that have full time and 36 that have part time, actually amounting to 51 because this includes Guam, Puerto Rico, and the Virgin Islands, which means this: That with 53 in the table for consideration, actually there are two States, and they are not the territories either, that do not have either part-time or full-time personnel at the State level devoted toward accident prevention.

Mr. ROBERTS. I would like to ask the Secretary if he thinks this is a healthy situation for States not to require physical examinations on renewals.

Mr. COHEN. Perhaps Dr. Terry and Mr. Joliet want to comment on this. I feel that it is a matter that we certainly ought to do a great deal more research on before we finally decide what needs to

be done, both with respect to further consideration of the individual and the examination of the automobile.

Those are two areas I think in which there is a great deal of controversy. Some States provide for examination of people over 65. This is interesting to a lot of the State legislators. But in principle, if that is good for people over 65, I think it is good for people under 65, because we all know that the variation in human capacity and performance is very great for people under 65 as well as for people over 65.

Mr. ROBERTS. Actually, we do require, do we not, pilots of planes, and I suppose marine pilots and locomotive engineers, and we require drivers of vehicles in Interstate Commerce, that is trucks that are under the licensure of the ICC to pass certain physical standards?

Mr. COHEN. I would like to say this, and then perhaps Dr. Terry would comment. I think we would all agree with the objective of that, and yet, I think we are at that stage in development of accident prevention that we don't really know what those standards ought to be.

Mr. ROBERTS. We have no place to go. Actually the ICC points out that they have no place to go for any information that is based on scientific research. Isn't that true?

Mr. COHEN. Yes. Commercial airplane pilots are very much up in arms over this so-called arbitrary ruling that at age 60 they can't fly any more. I wouldn't want to comment for or against it, but the point that I am trying to make is simply that we need to know a lot more about human capacities and how to set standards before we make a final judgment.

We are probably in the accident prevention field today where we were 15 years ago in cancer.

In other words, we have a lot of very fundamental work to do to assemble all this knowledge and information, and once it can be assembled, I think that competent scientific people then can begin to set standards that the States and different people in different areas can use.

Is that a fair statement, Dr. Joliet?

Dr. JOLIET. That is a very eminently fair statement. You can see the work that has been done in advancing the safety and quality of highways by developing the Interstate System. There is no comparison of these highways with what we knew when we were kids. However, drivers have not improved as the highways have. Nothing like a comparable advance has been made in determining who may or who may not drive cars from the standpoint of physical or mental limitations.

Mr. ROBERTS. I would like also to ask you if in the event of approval of this bill, you would see any infringement on such activity of the Interior Department, as minimum safety, or any infringement on the work of the Federal Aviation Agency, or upon the traditional role of the Department of Commerce through the Bureau of Public Records, or any other Federal agencies whose present jurisdiction would be divested by this bill, that is, with the amendments or suggestions which you have made in your statement.

Mr. COHEN. Mr. Chairman, the way I read the bill it neither is intended nor is there anything explicit which I think infringes on the

jurisdiction of these other areas that the Federal agencies are working on and in which they are doing very fine work.

I would, however, feel that if you were going to pass legislation, in order to avoid that difficulty, the statute should be made very clear that this is not intended to supersede the responsibilities of these agencies which have a specific responsibility in either mine safety, or occupational injury, or pilots, or any such areas. As I read the bill and as I read your hearings before, what you are looking for is a research function in the Federal Government which has already been given to the Public Health Service, which will attempt to pool all of the information available throughout our society and make it available to everyone and thus coordinate research in such a way that it will be more useful to everyone and accelerate the progress we made in this field without any duplication.

I think if the committee report or the statute were to make that clear there would not need to be any concern on the part of those other Federal agencies.

Mr. ROBERTS. Do you see any infringement or interference that could be promoted by this bill in the activities of such organization as the National Safety Council, which is a privately run nonprofit organization?

Mr. COHEN. Mr. Chairman, I think that there is nothing in this bill that interferes with the work of the National Safety Council or any other of the very fine nongovernmental agencies that are working in this field.

This problem is no different from the problem we have in, let us say, setting up a National Cancer Institute and its relationship to the many health agencies concerned with cancer.

We have a very fine working relationship between the public and private agencies. It is no different from setting up the National Heart Institute and giving it the responsibility for research, and it works fine with all the nongovernmental agencies in the heart field.

It is no different from the new institute that you were most responsible in creating last year, the National Institute of Child Health and Human Development, which has just been set up under Dr. Terry's supervision, that is going to work in the whole area of human development.

It works splendidly with all of these private organizations. I think if you look at all of the National Institutes of Health under Dr. Terry's supervision and guidance, one of the key objectives of his administration and the Department is that the Federal Government shall do those things that are difficult for private groups to do, because of their cost, because of the assemblage of various numbers of scientific personnel that are in shortage, and then make this information available to the voluntary agencies so they can undertake the education, the community action, bringing this knowledge right down to the people in the local community, undertake the safety campaigns, and undertake the dissemination of this knowledge. This bill does not in any way conflict with the work of the National Safety Council or any similar organizations that are working in this field, but rather I think, because of its enactment and highlighting, this would give greater prominence and public support to the fine work that they are doing at the present time.

Mr. ROBERTS. Would we, by the enactment of this bill, be recognizing these tremendous numbers of deaths and injuries as an epidemic and be taking an epidemiological approach to this problem as we do with heart disease, cancer, and all of these other killers and cripplers of mankind?

Mr. COHEN. You stated it very well. I think you might put it this way. That same argument that justifies our concentrating and intensifying our research work in cancer, or in heart, or metabolic diseases, is beginning to show that we ought to intensify our efforts in accident prevention in the same way. For many, many years people thought that all of these scourges were just a small part of life, couldn't be prevented, and that mankind just had to bear this burden.

We know now that many of these diseases and disabilities and accidents are preventable. We know that with the help of competent scientific research, ways can be found to overcome them, and if we invest money and concentrate the manpower in trying to find out the causes, we can prevent them. I think we are on the threshhold with accident prevention just as we have been with these other great diseases.

Mr. ROBERTS. Dr. Terry?

Dr. TERRY. Mr. Chairman, in relation to the National Safety Council and its interest, I would merely like to point as an example to our recent experience over the past few years, particularly the last 2 years, with our seat belt campaign.

As you realize, the National Safety Council, the American Medical Association, and the Public Health Service have taken the original initial role in promoting seat belts for the protection of our people in automobiles.

More recently we have been joined by important groups like the Federation of Womens Clubs. Many of the scientific organizations have taken it up in support and I think this merely serves to bring out that when one focuses attention on a matter for which we already have the basic information and know how to apply it, Federal interest and participation will not stifle the interest of the people in voluntary groups at either the National, State, or local level, but rather will stimulate and support it, and we have been most happy with the support we received from the Advertising Council, for instance, in this campaign.

I think certainly no one of these organizations could have done anything like what we have already accomplished in this field. It is a joint effort. I think this sort of legislation would help to focus interest at the official Government level and would help us in collaborating with other Government agencies who have responsibilities and interest in this, as well as the voluntary scientific organizations which also have an interest throughout the country.

Mr. ROBERTS. I know that you join this committee in its feeling of pride that we are now seeing a campaign to install seat belts that will run into the millions this year that just a few years ago was in the low thousands.

I do appreciate the fine part of the Public Health Service, and I believe the National Education Association and the manufacturers also, in promoting this campaign and I think certainly we will see some fine results of this activity.

Dr. TERRY. Mr. Chairman, in relation to the manufacturers, I think we will find that any time that the state of information is so

developed that really effective safety measures can be incorporated in the manufacture of vehicles, the industry will do it. I think the demonstration in terms of what has taken place in the seat belts is one of the obvious ones.

This points again back to the fact that in so many of these areas we need much more research and much more basic information.

Mr. ROBERTS. I might say in that connection, the then chairman has been visited by at least two, and I believe three, manufacturers that they plan to make seat belts available in all new cars, which I think will do a great deal through the promotion of the use of belts.

I have hoped that they would include the back seat, because it is my own personal opinion that passengers in the back seat are really in more danger, and particularly that seems to be the place where the children are, and many times they are less protected than the driver and the passenger right in the front seat.

I might say in that connection we hope to hear tomorrow from some of the manufacturers and members of the Seat Belt Council who, I hope, will tell us of some new developments in the uses of shoulder harness and design especially for children.

Thank you, gentlemen, very much.

I know you are quite busy, and we appreciate your time.

Mr. O'Brien?

Mr. O'BRIEN. I have one technical question. On page 2, line 19, of the bill, it refers to the Council and I was wondering what Council that is. The bill doesn't specify and the thought occurred to me that perhaps it was a typographical error, that we were referring to the National Accident Advisory Board.

Mr. COHEN. I think that is correct, sir. I think that in some other cases in the Public Health Service, the word "Council" is used and in this "Board" is used.

I think, as I read it, it is intended that that either meant the Board or change the "Board" to "Council."

Dr. TERRY. As a matter of fact, Mr. O'Brien, we have expressed the idea that we thought that such an advisory group would fit in better to our pattern and our nomenclature if it were referred to as a Council rather than a Board, because it would function in much the same manner as our other national advisory councils function.

Mr. O'BRIEN. We could change the word "Board" later in the bill?

Dr. TERRY. That would be our preference, sir.

Mr. O'BRIEN. Mr. Secretary, I was very much interested in your testimony and I am in sympathy with the bill, but one of the things that concerns me in all these fields is the question of translating research into action. You mentioned heart, and cancer, and so forth.

When you achieve a breakthrough in those fields, you immediately have a group of dedicated people who are in touch with patients, with hospitals, and so forth, and the stream moves rapidly. Isn't it a fact that after all this research, 90 percent of our problem is still going to be the political courage or iniative of State legislatures in dealing with these problems, particularly motor vehicles?

You mentioned these psychological tests, and so forth. What is a legislature going to do about the young person who apparently can drive much better than the older person, but is also inclined to take a thousand and one more chances than the older person? Will a legislature have the courage to weed out the cowboys, if you will, from the list of licensed drivers?

Mr. COHEN. I am glad you mentioned that, Congressman, because we are now in the area of implementation of the knowledge we have and, you know, some people say quite frequently about our human problems, "We already have more information than we know how to effectively use."

I would say that the legislatures, and I would include the county supervisors, and I would include the city councils and the mayors, and I would include the judges in this, have to get a lot tougher.

If I were a State legislator or if I were a judge, I certainly would be a lot tougher than most are today with regard to removal of license of people who drive under the influence of alcohol.

I think, when a man gets into a $5,000 vehicle and goes out on a highway that has cost maybe well over a million dollars a mile, and endangers himself and everyone else driving on this public highway by driving under the influence of alcohol, he ought to be dealt with very sternly.

Mr. O'BRIEN. Collectively, that fellow is much more dangerous than a drunken pilot in an airplane?

Mr. COHEN. Absolutely.

Mr. O'BRIEN. He couldn't lose his license just like that?

Mr. COHEN. In an airplane there is usually a second or a third co-pilot that can take over, but we allow people to drive this dangerous instrument, and then many times, after he has injured himself, injured property, injured other people, he can get right back in that car a few hours later and go ahead and endanger himself and other people. I think that the legislatures have to be tougher with penalties, and the individual judges should be tougher with regard to the discretion that they have when a person is found driving under the influence of alcohol.

If you can buy the drink, in my opinion, you can pay for a taxicab to take you home.

Mr. O'BRIEN. Mr. Secretary, that leads to my second question, which has to do with what we are doing with the knowledge we have now; apparently not enough. Isn't it possible that in the course of this research as things are developed which are satisfactory to those engaged in the research then we should at that stage from time to time, bring in the various motor vehicle commissioners and chairmen of the legislative committees who would have direct jurisdiction over the necessary legislation and translate these things as they are developed as effectively as we have translated this seat belt thing, which I agree with the chairman and Dr. Terry has been spectacular.

I found it already all around me now, people voluntarily having these things put in for the protection of their children and themselves. It seems to me if we just go into research and say we have all these things to learn, there is going to be a tendency on the part of the legislators and the public, if you will, to wait for some distant day when they have a complete program.

Could the ones who will have to translate research into action be brought in along the way?

Mr. COHEN. I think they must be, Mr. Congressman. I think that you have to do several things. You have to do your research. Then you have to train personnel that is competent to translate that research into local programs. Then you have to have a health education program that translates it to everybody, including pro-

fessional and nonprofessional people. In the course of that we have to have the technical services that will bring all of these national organizations into some kind of working arrangement in this country, so that these standards and these ideas arising from the research are translated into local action.

As the Surgeon General said, the Federal Government shouldn't do that alone. It should be a joint enterprise, with the attorneys general, the judges, the State highway commissioners, and the secretaries of state that give the licenses. We have to work with the various groups that set standards with respect to the sentencing of violators. This is a tremendous undertaking. We just haven't scratched the surface in this area at all, but unless it is a joint undertaking, unless we cooperate, this research isn't going to get down to John Jones in the community and be effective, and that is what we would like to do.

Mr. O'BRIEN. I agree with you, Mr. Secretary, and I might cite as an example of not doing something in an area where we have knowledge the present controversy over that support that you injected into your prepared text, boxing. Everybody knows that boxing is no longer boxing. It is slugging.

You are in there to knock the other fellow senseless and I hardly think that the result could be called an accident, but nevertheless, it is called an accident and we are doing nothing about it. That is why I speak of the courage at the legislative level, not just the State, but sometimes at the national, which is lacking. I might even say in another field, more or less in a joking way, I think the greatest booby-trap we have today so far as accidents are concerned is this modern luxury, the bathtub.

Nobody seems to do anything about it, and it seems to me that when you reach a certain age it is quite a chore to get out of a bathtub safely.

Mr. COHEN. There have been a few devices that I have noticed. I have gone to visit some of the old-age homes where accidents in the bathtub are a very significant thing, and there are a few rather very simple things if they are built in with the specifications of the nursing home or the private home that can certainly reduce these falls.

The handles at the side of the bathtubs, the rubber mats, the lowering of the tub so that the lifting of the body doesn't cause a slip, or the elimination of the electrical outlets too close to the bathtub. I am reasonably certain, as you say, if we get some of this knowledge as we have been trying to do to the architect and to the city planners a lot of that can be prevented.

Mr. O'BRIEN. And if we apply the same public relations technique along the way that we have to seat belts I think we can accomplish a lot of these things. I have in mind, and perhaps I haven't stated it too well, along the way bring in these people who are responsible for translating this into action and with respect to everything developed along the way, lets get it into action without waiting for the full program. Thank you, Mr. Chairman.

Dr. TERRY. In that respect, Mr. Chairman, it is my interpretation that paragraph 5 of section 382 in the bill would give us such authorization in terms of the collecting of and making available information through publications and other appropriate means, so that we have interpreted this as being within the sphere of possibilities, Mr. O'Brien.

Mr. O'BRIEN. I hope, Doctor, that you apply that provision to the hilt because I think it would be most helpful.

Mr. ROBERTS. I would like to ask just one other brief question and that is you mentioned the fact that there are apparently few full-time people in the State health departments. Is it not ture that we are faced with a shortage of trained researchers in this particular field of accident prevention?

Dr. TERRY. Yes, sir; I think we definitely are, Mr. Roberts. I think this is one of the very important limits of this provision, is the question of training. I don't mean in those States, for instance, where they do not have full-time people or do not have any persons at all devoted to this, that there aren't some people available, but obviously the shortage in this area is very severe because we have practically no training devoted to this particular area of accident prevention.

Mr. ROBERTS. Actually, could not such a facility serve as a basis for training people in this field and then they could be available through scholarships and grants to go out into universities, and colleges, and to the public health departments of the States for this type of work?

Dr. TERRY. Such a center certainly should not only train, but it should train trainers as well in terms of being the center which would help foster. We would not think by any means that all of the training would be restricted to such a center, because we would expect to carry on through various institutions, schools and so forth, also training programs there with training grant support, either individually or to the institutions, however it might be most appropriate, but we do need to focus a lot of attention on training as well.

Mr. ROBERTS. There is one other thing, Mr. Secretary, I would like you to supply for the record and that would be a list of grants that have been made to institutions for research in this particular field and I would like, if possible, you to cover these grants for the past 10 years.

Mr. COHEN. We will supply whatever we have in that area for the record, Mr. Chairman.

(The following information was furnished for the record:)

U.S. Public Health Service—Research grants in the area of accident prevention

Project title and grant number	Institution and investigator(s)	Years of support	Amount
1. Home Injury Survey—No. RG-2919.	University of Michigan: Velz and Hemphill. Prof. Clarence J. Velz, Department of Environmental Health, School of Public Health, University of Michigan, Ann Arbor, Mich.	1951–52	$55,512
2. Studies of Children Showing Injury Patterns—No. M-790.	Tulane University: Marcus Irwin M. Marcus, M.D., 3629 Prytania St., New Orleans, La.	1954–57	111,728
3. Automotive Crash Injury Research—No. AC-47 (formerly RG-4367).	Cornell University: (1) Moore; (2) Kraft, Wolf, and Campbell. Robert A. Wolf, director, Automotive Crash Injury Research of Cornell University, 316 East 61st St., New York, N.Y.	1956–62	668,662
4. Effects of Carbon Monoxide as an Atmospheric Pollutant on Health as Indicated by Relationship to Auto Accidents in an Urban Area—No. RG-5005.	University of Michigan: Cook and Clayton. Prof. Warren A. Cook, Department of Industrial Health, School of Public Health, University of Michigan, Ann Arbor, Mich.	1957–58	59,110
5. Laboratory Study of Accidents—No. M-1381.	University of North Dakota: Ammons and Ellingson. R. B. Ammons, Ph. D., Montana State University, Missoula, Mont.	1957	1,812
6. Human Behavioral Factors in Automobile Driving Safety, phase I—No. M-1508.	George Washington University: Mosel, Hunt, and Goldstein. Prof. James N. Mosel, Department of Psychology, the George Washington University, Washington, D.C.	1957	18,245
7. Family Injury Survey—No. AC-79 (formerly M-1928).	Connecticut State Department of Health: (1) Keehn; (2) Tutles and Waxman. Alexander J. Tutles, M.D., division of medical services, State department of health, State office building, Hartford, Conn.	1957–60	208,402
8. (*a*) Accidental Poisoning as a Case-finding Procedure; (*b*) Childhood Accidental Poisoning—a Community Study—AC-48 (formerly RG-5343).	San Jose (Calif.) city health department: Bissell, McInnes, and Clark. Dwight M. Bissell, M.D., city health department, 151 West Mission St., San Jose, Calif.	1958–62	65,557
9. California Accident Repeater Driver Scales—No. AC-78 (formerly M-2353).	University of Southern California: Guilford and Schuster. J. P. Guilford, Ph. D., Department of Psychology Graduate School, University of Southern California, University Park, Los Angeles, Calif.	1958–59	27,684
10. Experimental Case Studies of Traffic Accidents—No. AC-61 (formerly RG-5359).	Northwestern University: Baker and Banks, et al. Mr. J. Stannard Baker, Traffic Institute Transportation Center, Northwestern University, 1804 Hinman Ave., Evanston, Ill.	1958–60	188,100
11. Evaluation of Available Traffic Accident Records—No. RG-5361.	Georgia Department of Public Health: Terrell and Steed. Mr. James C. Terrell, service of biostatistics, division of administration and finance, State department of public health, Atlanta, Ga.	1958–59	24,608
12. Causes of Auto Accidents of Adolescent Drivers—No. AC-67 (formerly RG-5577).	Harvard University; Gallagher and Moore. J. Roswell Gallagher, M.D., the adolescent unit, the Children's Hospital Medical Center, Boston, Mass.	1958–60	92,340
13. Carbon Monoxide and Its Relation to Traffic Accidents—No. RG-5959.	National Sanitation Foundation: Vaughan, Cook, and Clayton. Henry F. Vaughan, Ph. D., the National Sanitation Foundation, School of Public Health, University of Michigan, Ann Arbor, Mich.	1958	21,400
14. Human Factors Related to Farm Accidents in Missouri—No. AC-44 (formerly M-2407).	University of Missouri: McNamara and Gadalia. Robert L. McNamara, Ph. D., Department of Rural Sociology, College of Agriculture, University of Missouri, Columbia, Mo.	1959–61	103,442

U.S. Public Health Service—Research grants in the area of accident prevention—Con.

Project title and grant number	Institution and investigator(s)	Years of support	Amount
15. Evaluation of Highway Traffic Safety Motion Pictures—No. AC-68 (formerly RG-5786).	Michigan State University: Merrill and Twyford. Irving R. Merrill, Ph. D., Director of Television Research, University of California Hospital, San Francisco Medical Center, San Francisco, Calif.	1959-60	$25,321
16. Field Experimental Studies on Accidental Trauma—No. AC-19 (formerly RG-5937).	Cornell University Medical College: McCarroll. James R. McCarroll, M.D., Division of Epidemiologic Research, Department of Public Health and Preventive Medicine, Cornell University Medical College, 1300 York Ave., New York, N.Y.	1959-64	315,639
17. Accident-inducing characteristics of motor vehicles—No. AC-1 (formerly RG-6073).	Public Service Research, Inc.: (1) Dunlap, (2) Schrieber. Dr. Robert J. Schreiber, Public Service Research, Inc., 91 Prospect St., Stamford, Conn.	1959-61	170,973
18. Research on fatal highway collisions—No. AC-49 (formerly RG-6084).	Harvard University: Moseley and Ford. Alfred L. Moseley, Department of Legal Medicine, Medical School, Harvard University, Boston, Mass.	1959-63	809,820
19. Epidemiology of childhood accidents—No. AC-2 (formerly RG-6090).	California State Department of Public Health: (1) Corsa and Manheimer, (2) Manheimer and Mellinger. Dean I. Manheimer, Bureau of Maternal and Child Health. State Department of Public Health, 2151 Berkeley Way, Berkeley, Calif.	1959-62	332,986
20. Skill decrement in continuous driving—No. AC-50 (formerly RG-6091).	Michigan State University: Barch and Forbes. Dr. Abram M. Barch, Department of Psychology, Michigan State University, East Lansing, Mich.	1959-62	49,268
21. Safety devices for automotive vehicles—No. AC-69 (formerly RG-6284).	University of Minn.: Ryan. Prof. James J. Ryan, Mechanical Engineering Department, University of Minnesota, Minneapolis, Minn.	1959-60	97,750
22. Driving behavior and traffic accidents—No. AC-53 (formerly RG-6359).	University of Michigan: Greenshields. Dr. Bruce D. Greenshields, Department of Civil Engineering, College of Engineering, the University of Michigan, Ann Arbor, Mich.	1959-61	63,740
23. Effects of acceleration on the human skeleton—No. AC-54 (formerly RG-6384).	Wayne State University: Lissner and Evans. Prof. Herbert R. Lissner, Engineering Mechanics Department, College of Engineering, Wayne State University, Detroit, Mich.	1959-63	173,672
24. Aviation crash injury research—No. AC-3 (formerly RG-6506).	Flight Safety Foundation, Inc.: (1) Hasbrook, (2) Kraft and Gregg. Mr. Merwyn A. Kraft, Flight Safety Foundation, Inc., 468 Park Ave. South, New York, N.Y.	1959-63	282,056
25. Role image of the State police trooper—No. M-2957.	Michigan State University: (1) Preiss, (2) Howell. Dr. John Howell, Department of Sociology and Anthropology, Michigan State University, East Lansing, Mich.	1959	18,112
26. Impact Attenuation in Protection Against Concussions — AC-51 (formerly RG-6094).	Snell Memorial Foundation, Inc.: Snively and Chichester. Dr. George G. Snively, Snell Memorial Foundation, Inc., 2315 Stockton Blvd., Sacramento, Calif.	1960-64	40,870
27. Mass Communication and Group Discussion Techniques—No. AC-52 (formerly RG-6296).	Drivers Safety Service, Inc.: Henderson and Plutchik. Dr. Harold L. Henderson, Drivers Safety Service, Inc., 298 Broadway, New York, N.Y.	1960-61	17,754
28. Human Factors in Traffic Accidents No. AC-55 (formerly RG-6550).	Hawaii Department of Health: Spicer. Dr. Robert A. Spicer, division of mental health, department of health, Kinau Hale, Post Office Box 3378, Honolulu, Hawaii.	1960-62	79,000

U.S. Public Health Service—Research grants in the area of accident prevention—Con.

Project title and grant number	Institution and investigator(s)	Years of support	Amount
29. Research in General Aviation Safety—No. AC-70 (formerly RG-6658).	Flight Safety Foundation, Inc.: Kraft... Mr. Merwyn A. Kraft, Flight Safety Foundation, Inc., 468 Park Ave. South, New York, N.Y.	1960	$77,622
30. Rockland County Child Injury Prevention Project—No. AC-56 (formerly RG-6717).	Health Research, Inc.: Schlesinger and Dickson. Dr. Edward R. Schlesinger, division of special health services, State department of health, 84 Holland Ave., Albany, N.Y.	1960-63	121,538
31. Bibliography of highway traffic safety literature—No. AC-77 (formerly RG-6763-A).	Michigan State University: Whitelaw... John L. Whitelaw, The Library, Michigan State University, East Lansing, Mich.	1960	2,300
32. Critique of needed research on child accident prevention—No. AC-71 (formerly RG-6798-A).	New York University: Brody..... Dr. Leon Brody, Center for Safety Education, New York University, Washington Square, New York, N.Y.	1960	2,300
33. Transportation human factors: Part I. Physical forces—No. AC-57 (formerly RG-6819).	University of California, Los Angeles: Mathewson, Hulbert and Wojcik. Prof. John H. Mathewson, Institute of Transportation and Traffic Engineering, School of Engineering, University of California, 405 Hilgard Ave., Los Angeles, Calif.	1960-62	115,287
34. Relating driver education to accident-avoiding behavior—No. AC-58 (formerly RG-7025).	Public Service Research, Inc.: Jacobs and Barmack. Dr. Joseph E. Barmack, Public Service Research, Inc., 91 Prospect St., Stamford, Conn.	1960-61	144,786
35. Effect of enforcement on driving behavior—No. AC-59 (formerly RG-7044).	International Association of Chiefs of Police: (1) Shumate and Crowther; (2) Smith. Mr. R. Dean Smith, field service division, International Association of Chiefs of Police, Inc., 1319 18th St. NW., Washington, D.C.	1960-61	161,774
36. School-Age Accidents and Education—No. AC-72 (formerly RG-7011).	National Education Association: Abercrombie and Key. Mr. S. A. Abercrombie, National Commission on Safety Education, National Education Association, 1201 16th St. NW., Washington, D.C.	1960-62	121,164
37. Development of a Criterion for Driver Behavior—No. AC-18 (formerly RG-7051).	Columbia University: Shoben..... Dr. Edward J. Shoben, Teachers College, Columbia University, 525 West 120th St., New York, N.Y.	1960-63	57,699
38. Measuring Teacher Effectiveness in Driver Education—No. AC-62 (formerly RG-7365).	Columbia University: Malfetti..... Dr. James L. Malfetti, Teachers College, Columbia University, 525 West 120th St., New York, N.Y.	1960-61	35,938
39. Automobile Collision Injury Experiments: Side impacts—No. AC-60 (formerly RG-7050).	University of California, Los Angeles: Mathewson, Severy, and Siegel. Prof. John H. Mathewson, Institute of Transportation and Traffic Engineering, School of Engineering, University of California, 405 Hilgard Ave., Los Angeles, Calif.	1961-62	49,984
40. Automobile Accident and Injury Prevention Studies—No. AC-73 (formerly RG-7822).	University of California, Los Angeles: Mathewson, Severy, and Siegel. Prof. John H. Mathewson, Institute of Transportation and Traffic Engineering, School of Engineering, University of California, 405 Hilgard Ave., Los Angeles, Calif.	1961-65	648,842
41. Group Dynamic Study of Driver Attitudes and Driving Behavior—No. AC-64 (formerly RG-7958).	George Washington University: Hunt and Schlesinger. Dr. Lawrence E. Schlesinger, Department of Psychology, the George Washington University, Washington, D.C.	1961-63	270,000
42. Protective Materials and Athletic Injury Prevention—No. AC-65 (formerly RG-8105).	University of California, Davis: Kovacic, and Snively. Prof. Charles R. Kovacic, Department of Physical Education, University of California, Davis, Calif.	1961-64	48,079

U.S. Public Health Service—Research grants in the area of accident prevention—Con.

Project title and grant number	Institution and investigator(s)	Years of support	Amount
43. Driver decisions in highway accidents—No. AC-66 (formerly RG-8106).	Institute for Research, Inc.: Stover, Burnett, and Slivinske. Dr. Robert E. Stover, Human Factors Section, Institute for Research, Inc., Post Office Box 60, State College, Pa.	1961-64	$173,884
44. Visual signal conspicuity—No. AC-46 (formerly M-4945-A).	American Institute for Research: York. Dr. Cyrus M. York, behavioral research program, American Institute for Research, 1808 Adams Mill Road NW., Washington D.C.	1961	2,300
45. Automotive accident instrumentation study—No. AC-9 (formerly RG-8771).	Laboratory for the Study of Sensory Systems, Inc.: Baldwin. Mr. Howard A. Baldwin, Laboratory for the Study of Sensory Systems, Inc., 4242 East Speedway, Tucson, Ariz.	1962	20,297
46. Enforcement effect on traffic accident generation—No. AC-8 (formerly RG-8742).	Indiana University: Shumate and Crowther. Mr. Robert P. Shumate, Department of Police Administration, Indiana University, 618 East 3d St., Bloomington, Ind.	1962-63	152,398
47. Relationship between vision test scores and driving record—No. AC-15.	University of California, Los Angeles: Mathewson and Burg. Prof. John H. Mathewson, Institute of Transportation and Traffic Engineering, School of Engineering, University of California, 405 Hilgard Ave., Los Angeles, Calif.	1962-64	174,970
48. Role of the drinking driver in traffic accidents—No. AC-16.	Indiana University: Borkenstein. Mr. Robert F. Borkenstein, Department of Police Administration, Indiana University, 618 East 3d St., Bloomington, Ind.	1962-63	71,863
49. Driving behavior as affected by alcohol—No. AC-20.	Indiana University: Forney and Hughes. Dr. Robert B. Forney, Department of Pharmacology and Toxicology, School of Medicine, Indiana University, 1100 West Michigan St., Indianapolis, Ind.	1962-64	78,598
50. Susceptibility to monotony as an accident predictor—No. AC-25.	San Jose State College: McBain. Dr. William N. McBain, Psychology Department, San Jose State College, San Jose, Calif.	1962-64	30,315
51. Driving and connotative meanings—No. AC-29.	Columbia University: Thorndike and Malfetti. Dr. Robert L. Thorndike, Teachers College, Columbia University, 525 West 120th St., New York, N.Y.	1962-64	118,898
52. Multivariate analysis of traffic accident records—No. AC-30.	Michigan State University: Allen. Dr. Terrence M. Allen Department of Psychology, Michigan State University, East Lansing, Mich.	1962	21,937
53. Accident prevention through observation of drivers—No. AC-33.	American Institute for Research: Hahn. Mr. Clifford P. Hahn, human relations research program, American Institute for Research, 1808 Adams Mill Road NW., Washington, D.C.	1962-66	85,595
54. Factors affecting public acceptance of seat belts—No. AC-37.	California State Department of Public Health: Manheimer and Mellinger. Mr. Dean I. Manheimer, Bureau of Maternal and Child Health, Division of Preventive Medical Services, State Department of Public Health, 2151 Berkeley Way, Berkeley, Calif.	1962-63	131,471
55. Simulation of traffic flow on a digital computer—No. AC-80.	Indiana University: Shumate. Mr. Robert P. Shumate, Department of Police Administration, Indiana University, 618 East 3d St., Bloomington, Ind.	1962-64	231,793
56. Epidemiology of tractor power take-off accidents—No. AC-12.	State University of Iowa: Knapp and Berry. Mr. Lafayette W. Knapp, Jr., Institute of Agricultural Medicine, Department of Hygiene and Preventive Medicine, State University of Iowa, Iowa City, Iowa.	1962	16,721

U.S. Public Health Service—Research grants in the area of accident prevention—Con.

Project title and grant number	Institution and investigator(s)	Years of support	Amount
57. Prediction of highway accidents—No. AC-24.	University of Missippi: McGuire..... Dr. Frederick L. McGuire, Division of Psychology, Department of Psychiatry, the University of Mississippi Medical Center, Jackson, Miss.	1962-65	$134,143
58. Investigation of variability in driving performance on the highway—No. AC-28.	Ohio State University: Rockwell..... Dr. Thomas H. Rockwell, Department of Industrial Engineering, the Ohio State University, 156 West 19th Ave., Columbus, Ohio.	1962-64	110,262
59. Effect of glare on simulated night driving—No. AC-87.	Purdue University: Tiffin..... Dr. Joseph Tiffin, Department of Psychology, Purdue University, Lafayette, Ind.	1962-63	26,502
60. Man-machine compatibility in very low altitude flight—No. AC-92.	Ohio State University: Galipault and Briggs. Mr. John B. Galipault, School of Aviation, the Ohio State University, Ohio State University Airport, Box 3022, Columbus, Ohio.	1962-63	81,068
61. Experimental studies of whiplash injuries—No. AC-00099.	Tulane University: Wickstrom and Martinez. Dr. Jack K. Wickstrom, Department of Surgery, School of Medicine, Tulane University, New Orleans, La.	1962-63	115,234
62. Automotive crash injury research—No. AC-00101 (continuation of AC-47).	Cornell Aeronautical Laboratory, Inc.: Wolf and Campbell. Mr. Robert A. Wolf, Director, Automotive Crash Injury Research, Cornell Aeronautical Laboratory, Inc., Post Office Box 235, Buffalo, N.Y.	1963-67	1,598,138
63. Study of traffic phenomena through digital simulation—No. AC-00106.	Midwest Research Institute: Levy..... Dr. Sheldon L. Levy, Mathematics and Physics Division, Midwest Research Institute, 425 Volker Dr., Kansas City, Mo.	1963-65	135,898
64. Causes of death in automobile accidents—No. AC-00107.	University of Michigan: Huelke and Gikas. Dr. Donald F. Huelke, Department of Anatomy, Medical School, the University of Michigan, Ann Arbor, Mich.	1962-63	8,832
65. Investigation of lead intoxication in children—No. AC-00108.	Washington University: Vietti and Berry. Dr. Teresa J. Vietti, School of Medicine, Washington University, 500 South Kingshighway, St. Louis, Mo.	1963-65	53,698
66. Driver tests as a means of accident reduction—No. AC-00109.	American Institute for Research: Slivinske and Anderson. Dr. Alec J. Slivinske, Los Angeles Office, American Institute for Research, 11607 Washington Pl., Los Angeles, Calif.	1962-64	117,079

Mr. ROBERTS. Thank you.

Mr. COHEN. I have just been looking over some of these grants while you were speaking and a number of them are very interesting, and have great possibilities. The list shows that there is promise in this area for solving some of these problems.

Mr. ROBERTS. Again we are very grateful to you, Mr. Secretary, and to Dr. Terry and Dr. Joliet for your appearance here today.

Dr. TERRY. Thank you.

Mr. COHEN. Thank you, Mr. Chairman.

Mr. ROBERTS. Our next witness is Col. John P. Stapp, U.S. Air Force, Deputy Chief Scientist, Aerospace Medical Division, Air Force Systems Command, Brooks Air Force Base, San Antonio, Tex. Colonel, it is a genuine pleasure to welcome you to our hearing.

Colonel Stapp has had a distinguished career in the field of accident prevention research and is a man who has put together most of the knowledge that we have in the field of space and what the human body could endure. He has conducted various experiments with the rocket-sled deceleration and has done a tremendous job in this field, and I always feel it is a great privilege to have him appear here as a witness.

Colonel, we are delighted to have you.

STATEMENT OF COL. JOHN P. STAPP, USAF (MC), DEPUTY CHIEF SCIENTIST, AEROSPACE MEDICAL DIVISION, AIR FORCE SYSTEMS COMMAND, BROOKS AIR FORCE BASE, SAN ANTONIO, TEX.

Colonel STAPP. Thank you, Mr. Chairman. May I make a statement, sir, to begin with?

Mr. ROBERTS. Yes, sir.

Colonel STAPP. A letter dated April 8, 1963, expresses the position of the Department of Defense with regard to H.R. 133. I will quote from this letter, the third paragraph:

> The Department of Defense appreciates the general objective of establishing national facilities to conduct and promote the coordination of accident research, but defers to the Secretary of Health, Education, and Welfare as to the merits of establishing such facilities in the Department of Health, Education, and Welfare, and as to the specific provisions of H.R. 133.

Therefore, speaking on behalf of the Defense Department I wish to commend and concur in the statement presented by the Hon. Wilbur J. Cohen on behalf of the Department of Health, Education, and Welfare. Hereafter I will be speaking as a private citizen and scientist.

In the first place, we are aware of this accident death problem because it is no longer overshadowed by epidemic disease deaths which have come under control through the use of vaccines, chemotherapy, and antibiotics, derived from research programs sponsored in many cases by the U.S. Public Health Service. We have every reason to hope that the same research methods practiced by the same organization will be no less effective in dealing with the accident prevention problem.

Our other reason for being acutely aware of accident deaths is that they rise with the increasing number of automobiles. A very simple solution would be to do away with privately owned automobiles, hazardous sports, and dangerous occupations, but I do not think that this democracy would go for such an approach.

The alternative is to apply the tried methods of U.S. Public Health Service to accident prevention. Forty thousand lives lost last year, half of them people less than 40 years of age, is a high price for neglecting this problem.

This bill, H.R. 133, is an amendment of title III of the existing Public Health Service Act, laid out in the traditional pattern of other such bills for dealing with preventive medical problems.

This bill recognizes the responsibility of the U.S. Public Health Service in accident prevention and empowers the Public Health Service to take appropriate action just as it has successfully in the past with many other health problems. This approach and this Government responsibility is in accordance with precedents of re-

sponsibility for loss of life at sea, assigned to the Coast Guard, and with prevention of loss of life in aerial accidents, which has been an area of responsibility of FAA and CAB. Other governments have dealt with the responsibility for accident prevention quite successfully.

Sweden, with a population of 7 million, has 1 million automobiles, and fewer than 10,000 accidents a year, which is about a 1-percent accident rate for the number of automobiles, and a very low injury and loss of life rate even on a relative basis compared with ours.

We can look within our own armed services. In the U.S. Air Force the Office of the Inspector General is responsible for flight safety, ground safety, and missile safety.

In the ground safety activity by applying the approach of collecting and disseminating information and advice, carrying on safety campaigns and using what research information was available, they have succeeded in the last 7 years through 1961 in cutting the loss of life from automobile accidents down from more than 700 to less than 400 per year. This is an example of the effectiveness of accident prevention in pilot plant experiment compared to the size of the total population of the United States.

Some of the investment in accident prevention and safety research can be charged to what we have already saved with successful epidemiology research. To present the problem of death and injury by mechanical force graphically let me cite the following facts:

A 170-pound astronaut on an Atlas missile can go from the launching pad to a velocity of 17,500 miles an hour in 5 minutes $\frac{1}{10}$th seconds, or to a velocity of 24,500 feet per second in 301.4 seconds. If you take half his weight times the velocity squared you get the kinetic energy. In this journey he has acquired 51 billion foot-pounds of kinetic energy with no injury or harm.

Three of our astronauts have made the round trip with no ill effects. If you were to take the same individual with no protective devices, bare-headed, and drop him 10 feet flat on his back on a concrete floor, he will attain a velocity of 6½ miles an hour and his body will be stopped in about one-hundredth of a second.

This amounts to only 51,000 foot-pounds of kinetic energy, but his skull can be fractured in two one-thousandths of a second on impact and his chances of surviving such a fall are in doubt. In this fall he has experienced 100,000 times less kinetic energy than he did in ascending into orbit, and this exposure has occurred in one thirty-thousandths of the time that it takes for him to go into orbit.

In rocket sled experiments with the volunteer subject going from 154 miles per hour to 34 miles per hour in a quarter of a second, a 120-mile-an-hour speed change in one-fourth of a second, he withstands 2,550,000 foot-pounds of kinetic energy change. This is 50 times more kinetic energy change than the astronaut experienced in being dropped 10 feet to the concrete floor and it takes place in 25 times the duration of the astronaut's impact on the concrete floor. This kinetic energy change can be withstood without injury. Somewhere between the orbiting astronaut and the astronaut dropping on the concrete floor are combinations of kinetic energy change and duration which can be safely sustained. On the basis of knowing this spectrum of kinetic energy change versus durations we can make recommendations on safe limits of human exposure.

Much more research has been done and still needs to be due on optimum packaging and restraining of the body and on energy absorbing devices to take dangerous kinetic energy-duration combinations and attenuate them into survivable and noninjurious exposures.

This basic research which needs to be carried out falls very appropriately within the scope of H.R. 133. I could go on and cite numerous other basic and applied research problems that need to be done in the field of crash protection. The Honorable Wilbur J. Cohen gave you an excellent exposition on some problems for research in accident prevention.

With both of these lines of research applied to the accident problem we are bound to have a growing accumulation of success in dealing with the very high rate of accidents and with the high rates of injury and loss of life that constitute an enormous loss in useful lives and in income, and even in tax revenue for this Nation.

That concludes my statement. Thank you.

Mr. ROBERTS. Thank you, Colonel. I was particularly impressed with your statement, aside from the fact that the Air Force has cut its loss of lives I believe by almost 50 percent, and I believe you stated from over 700 down to in the neighborhood of 400 lives, aside from the humane considerations, loss of head of a family or the heartache and the suffering that such a loss also brings with it.

As a matter of dollars and cents investment how much would you estimate that the Air Force saved the U.S. Government in cutting that loss 50 percent?

Colonel STAPP. Since these were people in uniform, not their families, but just the members of the Air Force, if 300 fewer of them died, multiply that by $40,000 and I think that you come to a reasonable estimate of the saving.

Mr. ROBERTS. According to the way I have calculated it, it would be in the neighborhood of $12 million, would it not?

Colonel STAPP. Yes, sir.

Mr. ROBERTS. And this improvement has come about in the past year?

Colonel STAPP. Past 7 years, through 1961.

Mr. ROBERTS. That is a $12 million saving annually?

Colonel STAPP. Yes, sir, and we hope to do better.

Mr. ROBERTS. How long were you in charge of the automotive crash research project that the Air Force conducted?

Colonel STAPP. At Edwards and Holloman Air Force Base we began programs on aircraft crash survival and escape from aircraft, the same methods and the same human tolerances applied in case of automobile and ground vehicle accidents. Therefore we did specific research in that area from 1955 through 1958. The overall program on crash research began in 1947 and still continues.

Mr. ROBERTS. At the time you were in charge of that program what was your annual budget?

Colonel STAPP. I believe it was about $30,000 a year specifically on automobile crash research. Of course we were using salvage automobiles, the ones that could not be sold because the motors would not run. Therefore, we towed them in our crash simulation experiments.

Mr. ROBERTS. Were other services conducting similar type programs, or was this the only one within the armed services at that time?

Colonel STAPP. This was the only one in the armed services.

Mr. ROBERTS. It is my understanding that this was the basis for the factual data that has been successfully used in the successful orbiting of our astronauts. I won't say most, but I will say a great deal of information came out of this crash program. Is that correct? Is that a fair statement?

Colonel STAPP. Yes, sir, that is right. In some of the rocket sled runs simulating aircraft escape conditions in flight, velocities attained and the durations of accelerations in horizontal track runs corresponded to those of vertical rocket launches.

Mr. ROBERTS. That program is not in existence at the present time, is it, Colonel?

Colonel STAPP. The automobile crash program is not in existence.

Mr. ROBERTS. It has been abandoned because of lack of funds?

Colonel STAPP. It was discontinued when submitted for funding in 1958.

Mr. ROBERTS. Is there any similar program now being conducted by any of the services that you know anything about in the automotive field?

Colonel STAPP. Not specifically in the automotive crash area.

Mr. ROBERTS. Is not this loss of life common o the other services just as it is to the Air Force?

Colonel STAPP. Yes, sir, and so is the information which we obtained from our investigations and which was made available to other branches of the Armed Forces and to the automotive industry.

Mr. ROBERTS. The old cars were nonsalvageable vehicles that were made available on a free basis?

Colonel STAPP. That is right. They were ones that could not be sold.

Mr. ROBERTS. By the industry?

Colonel STAPP. No, by the salvage yards of the Air Force.

Mr. ROBERTS. Again I want to thank you very much for your appearance and your fine presentation that you always make. Mr. O'Brien.

Mr. O'BRIEN. Colonel, I am quite fascinated by those figures. With respect to these people whose lives were saved, these drivers that were instructed, in this young category, weren't they the ones that without too much discipline on the highways are responsible for very heavy percentage of accidents?

Colonel STAPP. Yes, sir. Further, a very interesting comparison. I have the figures for the year 1961. Only 12 deaths occurred in official vehicle accidents during that year. The remainder of the deaths, in the order of 300 a year occurred in private vehicle accidents with vehicles driven or occupied by members of the Air Force.

Mr. O'BRIEN. I assume that the research, and advice, and so forth had a great deal to do with it, but wasn't discipline a factor in there too?

Colonel STAPP. I think the discipline made the difference between the 15 deaths in official vehicles, driven under orders and 300 some-odd private vehicles driven at the discretion of the owner.

Mr. O'BRIEN. But even in the private vehicle there was a reduction?

Colonel STAPP. Yes, sir, a reduction compared with previous years of the Air Force.

Mr. O'BRIEN. That could have been, in addition to the research, a carryover of the discipline because there would be a way of punishing the fellow?

Colonel STAPP. I think, though, that the discipline factor has remained fairly constant.

Mr. O'BRIEN. Yes. What I am getting at is that with research, and we are applying this to young people and older people who are not in the armed services, there has to be some form of discipline or loss of privilege hand-in-hand with the research.

Colonel STAPP. About the same in civilian life as we have in the Armed Forces actually because the same violations meet about the same punishments.

Mr. O'BRIEN. In addition, they have to face a commanding officer after it is over.

Colonel STAPP. Many men have to face their wives after it is over too.

Mr. O'BRIEN. Or wives face their husbands. Colonel, one final question. You mentioned Sweden. Do you happen to know what the answer is there that they have such a remarkable record compared with ours?

Colonel STAPP. Yes, sir. 80 percent of the automobiles in Sweden are equipped with seat belts, and in addition, most of them have a diagonal body strap going over the outside shoulder and attached to the side post of the car. In Sweden the penalty for driving while intoxicated, and there the intoxication level is considered to be, I believe, 70 parts percent versus the 150–200 parts percent of blood alcohol level considered intoxication here, is that they go to jail for up to 3 months and have to go through complete driver training before being eligible to apply for a driver's license and take a test in about 3 years.

As a result there are lots of women drivers in Sweden. They are greatly appreciated after parties.

Mr. O'BRIEN. Thank you very much, Colonel.

Mr. ROBERTS. Colonel, thank you very much for your statement.

Colonel STAPP. I thank you.

Mr. ROBERTS. Since the House of Representatives is meeting this afternoon the hearing will be recessed until tomorrow at the same time in the same hearing room at which time we will have other important witnesses on H.R. 133.

(Whereupon, at 11:50 a.m. the hearing was recessed, to reconvene at 10 a.m., Wednesday, April 10, 1963.)

NATIONAL ACCIDENT PREVENTION CENTER

WEDNESDAY, APRIL 10, 1963

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND SAFETY
OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington. D.C.

The committee met at 10 a.m., pursuant to recess, in room 1334, Longworth Building, Hon. Kenneth Roberts (chairman of the subcommittee) presiding.

Mr. ROBERTS. The subcommittee will please come to order.

The subcommittee is resuming hearings on H.R. 133 and our first witness today will be Mr. Charles W. Prisk, Deputy Director, Office of Highway Safety, Bureau of Public Roads, U.S. Department of Commerce.

Mr. Prisk, we are glad to have you appear before the subcommittee.

STATEMENT OF CHARLES W. PRISK, DEPUTY DIRECTOR, OFFICE OF HIGHWAY SAFETY, BUREAU OF PUBLIC ROADS, U.S. DEPARTMENT OF COMMERCE

Mr. PRISK. Mr. Chairman and members of the subcommittee, I am Charles W. Prisk, Deputy Director, Office of Highway Safety, Bureau of Public Roads, U.S. Department of Commerce.

I appreciate this opportunity to appear again before your committee and to present some of our views on H.R. 133. This bill, as you well know, would establish a National Accident Prevention Center in the Public Health Service as a means of stimulating accident research and related operating programs.

The remarks I shall offer will deal entirely with the highway traffic accident prevention phases of H.R. 133. The Department of Commerce defers to the views of the Department of Health, Education, and Welfare insofar as other accident prevention areas of this bill are concerned.

The principal mission of the Bureau of Public Roads, in the Department of Commerce is, as you know, to administer the Federal highway program.

We are becoming increasingly aware that the effects of the large Federal investment in highway improvement are of the greatest importance to safety and efficiency in highway transportation.

An important organizational adjustment in the structure of the Bureau of Public Roads was made about a year ago to strengthen the contribution of the Bureau to safety in traffic accident prevention efforts.

The Office of Highway Safety now has a status equivalent to that of other major organizational units in the Bureau of Public Roads. It is for this reason, of course, that we have a deep interest in the legislation you are considering today.

The Department would like the committee to understand clearly that it has no wish to oppose accident prevention activities in the Public Health Service. From our long study of the traffic accident problem, as a part of highway transportation, we recognize it as one that requires contributions from the knowledge and experience of many disciplines—those in the life sciences as well as those in physical sciences.

Perhaps the most common misunderstanding of the traffic accident prevention field is that it is the province of some one skill or agency. Traffic accidents do not happen except as drivers, vehicles, and highways are involved.

We see in the provisions of H.R. 133 an intent to broaden the total Federal contribution toward the solution of a major domestic problem that results in needless loss of life, uncounted years of suffering, and a truly severe economic impact on the Nation's welfare.

In spite of all the presentations that have been so ably made before this subcommittee by so many persons, I doubt that there has yet been a full estimate of the extent of this serious problem.

Recent research performed by the Bureau of Public Roads—and perhaps this is why I interjected my reservations—in cooperation with the Illinois Division of Highways, revealed that the direct cost—this is out-of-pocket cost—of traffic accidents in that State amounted to, in a recent year, 0.97 of a cent per passenger car-mile, or the equivalent of an added tax of 8 cents per gallon of gasoline.

There is no fully satisfactory way to estimate the indirect cost of traffic accidents but our findings from the Illinois study and others of a similar nature, made in cooperation with other States, suggest that the usual dollar estimates may be on the low side. In any event, the direct costs alone are great enough to cause very serious concern.

To come more specifically to the provisions of H.R. 133, our principal reaction is that the legislation is written in such broad terms as to authorize activities that could unnecessarily duplicate repsonsibilities and programs of the Bureau of Public Roads dealing with highway safety.

However, we feel that there are fundamental values in some portions of the bill, and propose in this statement to emphasize these positive characteristics, with the hope that a later action of the committee will result in sharper definition of its total scope.

In our opinion, H.R. 133 would better serve the current needs if it were to identify the function of the proposed National Accident Prevention Center more precisely. It seems only reasonable that an accident prevention authority situated in the Public Health Service should be defined in terms of the medical, clinical, and behavioral sciences with which that agency deals.

It is obvious to all students of highway safety that much more official attention needs to be focused on many aspects of traffic accident prevention. Thus, while the competence of the Public Health Service to deal with safety from the standpoint of the medical and other life sciences is an acknowledged virtue of H.R. 133, so too is it important that there be no subordination, directly or indirectly, of the programs

that draw on the physical sciences as they operate to increase the safety of the highway and the vehicle.

Among Federal agencies, the Bureau of Public Roads is a recognized primary source of specialized knowledge on highway and traffic engineering aspects of safety, and we in turn recognize the Public Health Service as an authority in the area of human factors.

Each department undoubtedly has a valid interest in the vehicle. However, it is most important to realize that both agencies would fall short of their responsibilities to highway safety if they were to overlook the interplay of the highway, the vehicle, the driver, and the environmental conditions.

In the instance of the Public Health Service, I believe that traffic accidents have been looked upon as a matter of public health, whereas in the Bureau of Public Roads we view them as deficiencies of the highway transportation system.

These two viewpoints are easily reconciled when there is a sufficient understanding of the respective areas of responsibility and interest in the two agencies.

I am glad to report that good progress is being made now through frequent staff contacts on program plans, both for traffic safety research and traffic safety operations.

In a larger area the Interdepartmental Highway Safety Board, which was activated last year, has contributed in vigorous fashion to this improved coordination of the Federal effort in highway safety.

The Interdepartmental Board represents the interests of the seven major Federal agencies having highway safety responsibilities. A working staff of technical specialists of these agencies meets regularly for the exchange of ideas and knowledge concerning their respective programs.

In addition to this improved communication on programs of the Federal agencies, a body of policy agreement is gradually being developed by the Board's staff, and this also will have a lasting benefit for future coordination of Federal efforts in highway safety.

The Secretary of Commerce serves as Chairman of the Interdepartmental Board and the Office of Highway Safety in the Bureau of Public Roads provides its secretariat, so we have seen at close range the responsible product of this new joint interest in safety now developing among the several Federal departments and agencies concerned.

It appears that a principal aim of H.R. 133 would be to provide the Surgeon General with the authority to make special project grants.

These could cover such activities as a special investigation of emergency medical care for highway traffic accident victims. The Office of Highway Safety in the Bureau of Public Roads has a parallel interest in this type of problem from the viewpoint of the highway and the many services essential to its successful and safe operation.

We would support this portion of the legislation because of its potential for achieving practical solutions for a wide range of troublesome areas.

Another provision of H.R. 133 would authorize the Public Health Service to make grants for training in accident prevention.

We can easily agree on the importance of an additional supply of competent scientists, and believe that the effect of the training grants would be to attract useful workers in great numbers to the accident prevention field.

Our Office of Highway Safety has recently established a limited program for highway safety trainees as a means for supplementing the present scarce supply of competent manpower in the field.

The Department of Commerce has had remarkable success with its other training programs in the highway field and we would therefore commend this provision of H.R. 133.

In summary, I would repeat that the Department of Commerce is sympathetic with the intent of the bill, and with the strengthening of accident prevention programs in the Public Health Service. However, as stated, we believe that the functions of the proposed National Accident Prevention Center should be more precisely identified.

Thank you, Mr. Chairman.

Mr. ROBERTS. Thank you, Mr. Prisk.

The Chair would certainly like to compliment your Department and the Secretary for getting the Interdepartmental Board set up and active and we are hoping, of course, that the fine work that has been done in the Department will be expanding.

I think this statement is a somewhat different approach from the statement that was made by the Department, with reference to this bill last year, that is, the last session. I take it that with the changes that you have suggested so as not to infringe on the jurisdiction of the Bureau of Public Roads and the Department of Commerce, or maybe I should say that the other way, you would go along with the bill, as I understand your position.

Mr. PRISK. This essentially is the case. I think that the judgments of the Department of Health, Education, and Welfare with respect to the needed amendments along with the Department of Commerce letter and the suggestions I have presented here, would cover the situation.

Mr. ROBERTS. I appreciate very much your statement, and your appearance. The gentleman from Minnesota?

Mr. NELSON. Thank you, Mr. Chairman.

Perhaps this would not be regarded as a question, but one of the perplexing things to me, and I am sure that you may be aware of these problems as I am, is yesterday we were given this book of statistics on persons injured in the home.

Here I have a Government bulletin from the Department of Agriculture on Safety: "Watch Your Step, Avoid Farm Accidents", bulletins all over the place, and the thing that perplexes me a bit is, if the Department of Health, Education, and Welfare is in a position to make a survey on injuries in a home, it would seem to me they would also be in a position to examine what other agencies of the Government are doing the same thing.

The thing I don't want to do is to become involved in setting up another agency to do something that some other agency is already doing and get a duplication with more and more agencies of the Government operating.

I am in sympathy with the idea of trying to find out what is being done and where and get it sort of coordinated, but we have to pick and choose between what is already being duplicated, and what we are trying to do in this bill, I don't know, but it is perplexing because we get bulletins all the time.

I want to thank you for your statement. I think it is very well put together and certainly one that indicates a good deal of study relative to this bill.

I haven't any further questions, Mr. Chairman.

Mr. ROBERTS. I might say this in passing to the gentleman from Minnesota. He has touched on what I consider to be one of the main objectives of this type of bill, to pull together some of the activities that have in the past been scattered all over the lot.

I think that we can avoid a great deal of duplication of effort by this bill. I think it probably lends itself to some amendments.

Mr. NELSEN. If the gentleman would yield, the point I would like to make is if the HEW provides the personnel to accumulate information like this, which they can, it seems to me it would be very simple for HEW also to check over what other agencies are doing and get them into a report with the personnel they have rather than setting up more agencies at this point.

I am in sympathy with the chairman in his objective, but I am wondering if it can be done under present arrangements, and I think it is worth discussing and I am sure we will in executive session at a later point.

Mr. ROBERTS. I thank the gentleman. Thank you, Mr. Prisk.

Mr. PRISK. Thank you.

Mr. ROBERTS. Our next witness is Mr. W. G. Johnson, general manager, National Safety Council, 425 North Michigan Avenue, Chicago, Ill.

Mr. Johnson, we are glad to welcome you to our hearings. We always found you to be very willing to cooperate with the committee in its efforts to achieve better results in the area of Safety and Public Health.

I know from your knowledge and long experience with the problems that this committee faces, that you are able to make a very fine contribution and we are very happy to have you.

STATEMENT OF W. G. JOHNSON, GENERAL MANAGER NATIONAL SAFETY COUNCIL

Mr. JOHNSON. Thank you, sir. Mr. Chairman and members of the committee, my name is W. G. Johnson. I am general manager of the National Safety Council. In order that there be no misunderstanding of the National Safety Council's position regarding H.R. 133, I will begin by stating that the National Safety Council's position remains unchanged from this committee's hearings February 6. 1962.

I have said on numerous occasions that it was highly unfortunate that certain objectionable features of H.R. 133 were clouding the principal issue—the need of the U.S. Public Health Service for an intramural Research Facility or Laboratory.

We have been delighted to receive reports of public statements by the subcommittee chairman outlining the U.S. Public Health Service need for a research center, because these statements seem to indicate that the subcommittee chairman shares our view that a research center or facility or laboratory is the primary need.

The National Safety Council, therefore, urges that H.R. 133 be amended to eliminate the features objected to last year, and the Council then believes that the very strongest public support can be marshaled for the research facility.

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In an effort to clarify the Council's strong support for a research facility or laboratory, I wrote to the subcommittee chairman on February 27, 1963. Unless the subcommittee chairman considers my letter too informal for the committee record, I would ask that the letter and accompanying Council statement be made a part of this record.

I would read at this time simply one short sentence which crystallizes the National Safety Council's strong support—

In order to provide a continuing program of directed and applied research to develop solutions to accident problems, there should be established in the Public Health Service an Accident Prevention Research Laboratory.

Mr. ROBERTS. Without objection, the letter will be made a part of the record.

(The letter referred to follows:)

NATIONAL SAFETY COUNCIL,
Chicago, Ill., February 27, 1963.

Hon. KENNETH A. ROBERTS,
Chairman, Subcommittee on Public Health and Safety, Committee on Interstate and Foreign Commerce U.S. House of Representatives, Washington, D.C.

DEAR KEN: Prior to Al Chapman's departure, we had several discussions of the needs of the Public Health Service. From these discussions, plus the testimony you received on H.R. 133, we have come to feel that the attached suggestions would fill a major remaining gap in Public Health Service authorization and would also fulfill the principal objectives of H.R. 133. In drafting the attached recommendations we have also relief heavily on "Analysis of Responsibility and Capability of the Public Health Service in Accident Prevention," a report by Operations Research, Inc., dated June 11, 1958.

I also feel that these suggestions essentially fulfill the recommendations twice made by the Accident Prevention Advisory Committee of the U.S. Public Health Service, and would undoubtedly have the enthusiastic support of that group.

We have formed no judgment as to whether a formal Board of the type proposed in H.R. 133 or the present Accident Prevention Advisory Committee of U.S. PHS is the better instrumentality for supervision of all U.S. PHS accident prevention activities (including the proposed laboratory). From my participation in the Accident Prevention Advisory Committee, I'd say it has the capabilities for discharging any responsibilities placed upon it. However, we think your experience and the experience of the U.S. PHS should guide on this point.

I shall be in Washington next week, and shall phone you on Monday to see if we can get together some time on Tuesday.

If these suggestions meet with your approval, I feel confident we can rather quickly develop broad and strong support for this essential improvement in Public Health Service capabilities.

Best regards.

Sincerely,

W. G. JOHNSON,
General Manager.

Some elements of legislation needed to establish a Public Health Service Accident Prevention Research Laboratory—

1. In order to provide a continuing program of directed and applied research to develop solutions to accident problems, there should be established in the Public Health Service an Accident Prevention Research Laboratory.

2. In carrying out the above purpose, the Surgeon General should be authorized to—

(*a*) conduct a continuing intramural research program in the basic medical, clinical and behavioral sciences so directed as to meet research needs which become evident in the nondirected grants-in-aid research programs or in the conduct of accident prevention programs;

(*b*) assist in the coordination of research programs conducted by public and private agencies, organizations, and individuals;

(*c*) make available research facilities of the Laboratory to appropriate public authorities, and to health officials and scientists engaged in special studies related to the purposes of the Laboratory;

(*d*) secure from time to time, and for such periods as he deems advisable, the assistance and advise of persons from the United States or abroad who are experts in the field of accident prevention;

(*e*) establish and maintain research fellowships in the Laboratory, with such stipends and allowances (including travel and subsistence expenses) as he may deem necessary to train research workers and procure the assistance of research fellows from the United States and abroad;

(*f*) provide training and instruction, and establish and maintain traineeships in the Laboratory in matters relating to the study of, causes of, and the development of means of preventing accidental deaths and injuries, with such stipends and allowances (including travel and subsistence expenses) for trainees as he may deem necessary.

3. The Surgeon General should be authorized to accept conditional gifts for study, investigation, or research into the causes and prevention of accidental deaths and injuries, or for the acquisition of grounds or for the erection, equipment, or maintenance of premises, buildings, or equipment of the Laboratory.

4. Appropriations should be authorized for acquisition of land, erection of buildings, procurement of equipment, adequate staffing, and other expenses necessary to the establishment and operation of the Laboratory.

Mr. JOHNSON. In further support of the need for a research facility, I would like to introduce into the record a somewhat more lengthy statement which is currently under consideration by the Accident Prevention Advisory Committee of the U.S. Public Health Service.

This statement grew out of a meeting of the committee March 6 and 7. The statement and resolution are at this time being distributed to the members of the committee for final approval.

Consequently, I am unable to say on this date that the resolution is final. On the other hand, the discussions at the meeting were such as to indicate that the intent of the resolution will receive almost unanimous approval of the committee. I can say today that the draft resolution does represent the viewpoint of the National Safety Council.

I submit the draft resolution.

(The resolution referred to follows:)

The Advisory Committee reaffirms its conclusions as to the necessity for the establishment of U.S. Public Health Service Accident Prevention Research Facilities. It recommends that (a) steps be taken to clarify as fully as possible the purpose and objectives of the facility for other Federal and State agencies and private groups participating in accident prevention activities, (b) that such Facilities be established as soon as possible.

The purpose of seeking such facilities and staff for directed in-house research in the basic medical, clinical and behavioral sciences is to meet the day-to-day obligations and specific long- and short-term objectives essential to the fulfillment of the mission of the U.S. Public Health Service Division of Accident Prevention. The research to be accomplished within the Facilities, by its scientific staff and, when appropriate, by Federal, State, and local visiting scientists, is to provide a program of applied research directed toward the development of solutions to specific problems in support of public health accident prevention operations and services; provide for program continuity and effectiveness of directed research and grants operations; develop and maintain the necessary high degree of professional proficiency of the staff.

Accordingly the Accident Prevention Advisory Committee makes the following recommendations:

RESOLUTION

"1. That the U.S. Public Health Service undertake to clarify the purpose, intent, and plan of operation for a Public Health Service Accident Prevention Research Facility to increase the understanding of the concept of such a facility among Federal, State, and private groups sharing in the overall responsibilities for accident prevention and planning and conducting complementary activities in the various fields of safety research and operating programs.

"2. That the U.S. Public Health Service should proceed as expeditiously as possible to develop and operate U.S. Public Health Service Accident Prevention Research Facilities with an adequate staff to conduct continuing in-house research in the basic medical, clinical, and behavioral sciences looking toward development of new or improved methods of prevention of accidental injury and death essential for support of U.S. Public Health Service accident programs and services."

Specifically, it is the judgment of the Accident Prevention Advisory Committee that the facilities for applied research in accident prevention should provide for essential experimental studies such as are listed as examples below.

(*a*) Laboratory research on: normal biological and disease mechanisms; physiological and psychological bases of behavior; and physical and mental growth and maturation as related to accident prevention.

(*b*) Clinical studies on: performance, behavior, physical condition, incapacitation, impairments, aging and disease as variables in accident causation.

(*c*) Feasibility or preliminary studies of various research approaches for accident prevention program development and for validation of reported findings.

(*d*) Measurements and description of human capabilities under the conditions they will be exercised, i.e., practical real life situations as related to accident prevention.

(*e*) Computer studies of the influence of the variables in accident causation and prevention.

(*f*) Simulation studies of the requirements, behavior and performance in potentially hazardous tasks and situations, and in accident prevention measures.

The signifiance of this draft resolution for the subcommittee's deliberations lies, I believe, in two points:

1. The resolution endeavors to make it clear that a research facility is a necessary element for the fulfillment of the mission of the U.S. Public Health Service, Division of Accident Prevention. The Division cannot adequately perform its assigned tasks without the research facility.

2. The resolution provides in concise form an outline of the kinds of intramural research projects which could be undertaken in the basic medical, clinical, and behavioral sciences, and thus make an important contribution to our knowledge of accident prevention.

If the subcommittee's record of H.R. 133 remains open for the next month or so, I would suggest that the subcommittee get the final action of the Public Health Service Advisory Committee on this resolution, including a committee roster indicating the members who are giving their active support to this resolution.

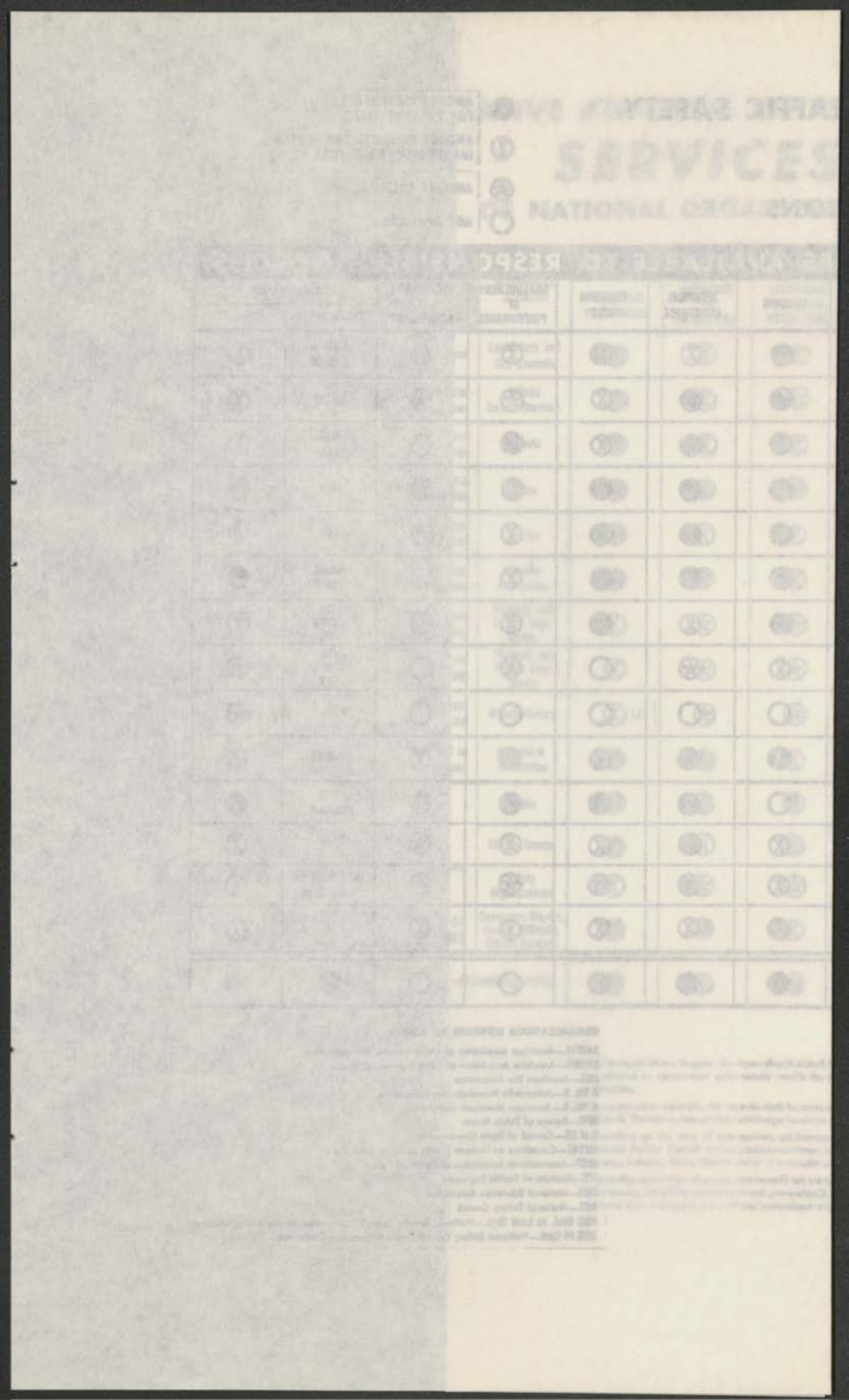
Strong support for interdisciplinary accident prevention research facilities was given just yesterday when the President's Committee for Traffic Safety approved the report of its Research Subcommittee, and this important report now becomes a part of the action program of the President's Committee.

I might say, sir, that the Committee met at the White House with the President and this report was a part of those proceedings.

The Research Subcommittee of the President's Committee has worked for several years to prepare a basic policy statement on the role of research in traffic accident prevention. I would strongly urge that this subcommittee obtain copies of this new report, which is now at the printer's, because I know you will find that it is a valuable foundation for your subcommittee's consideration of many present and future problems in the area of research.

The report recommends, among other things, that we should "develop interdisciplinary accident prevention research facilities on a national basis."

This, in effect, gives support to the idea that there should be an Accident Prevention Research Facility in the U.S. Public Health



QUANTITATIVE ANALYSIS OF TRAFFIC SAFETY
SERVICES
OF NATIONAL ORGANIZATIONS

● AMOUNT INADEQUATE FOR PRESENT NEEDS

⊗ AMOUNT ADEQUATE FOR PRESENT, INADEQUATE FOR FUTURE NEEDS

⊛ AMOUNT ADEQUATE

○ NOT APPLICABLE

OBJECTIVES	RESPONSIBLE AGENCIES	TYPES OF SERVICES AVAILABLE TO RESPONSIBLE AGENCIES									
		RESEARCH, FACT-FINDING	EXCHANGE OF INFORMATION	STANDARDS OR RECOMMENDATIONS	TRAINING	TECHNICAL ASSISTANCE	PROGRAM AIDS	MEASUREMENT OF PERFORMANCE	RECOGNITION OF ACHIEVEMENT	COORDINATION	
										INSTRUMENT	CAPACITY
Sound uniform laws	Legislators and City Councils	●	⊗	⊗	●	⊗	●	⊗	●	A Mn. A C of SG	⊗
Adequate accident reports used to guide programs	Official Record Bureaus	●	⊗	⊛	●	●	⊗	⊛	⊛	CUTAS	⊗
Good instruction for children and youth	Schools	●	⊗	⊗	●	●	⊗	●	⊛	NSC NEA	⊗
Traffic supervision and firm enforcement	Police	●	●	●	●	●	●	●	⊛	IACP	●
Dispense justice and create respect for law	Courts	●	⊗	⊗	●	●	●	⊗	⊛	ABA	●
Strict requirements for obtaining and retaining driving privileges	License Authorities	●	●	⊗	●	●	●	⊗	⊛	AAMVA BPR(1)	●
Increased safety of existing roads and streets through engineering	Highway and Traffic Engr. Depts.	⊗	⊛	⊛	●	⊗	●	⊗	⊛	ITE AASHO BPR	⊗
Construction of additional streets and highways to carry traffic safely	Highway and Traffic Engr. Depts.	⊗	⊛	⊛	⊗	⊛	○	⊗	○	ITE AASHO BPR	⊛
Vehicles progressively easier to operate safely and minimizing injury potential	Manufacturers	⊗ (2)	⊛	⊛	○	○	○	○	○	A M. A	⊛
Vehicles maintained in safe operating condition	Inspection Authorities	●	●	⊗	●	●	●	●	⊗	AAMVA	●
Citizens	Media	●	●	●	○	●	●	●	●	NSC PI Conf.	●
• Informed and safety-minded	Citizen Groups	●	⊗	●	⊗	●	⊗	⊗	⊛	(3)	⊗
• Supporting accident prevention	Safety Organizations	⊗	⊛	⊛	⊗	●	●	⊛	⊛	NSC Conf. on Local Orgs.	⊗
COORDINATION OF STATE & LOCAL PROGRAMS	Governors, Mayors, County Officials, Citizen Leaders	●	●	⊗	●	⊗	⊗	⊗	⊗	(4)	⊗
Coordination of services of national agencies		●	●	●	●	●	●	⊙	○	●	●

Approved April, 1963, by the Traffic Conference Executive Committee

(1) The National Driver Register Service of the Bureau of Public Roads may be utilized to complement other basic requirements of driver license authorities.

(2) The responsible agencies, the manufacturers, perform most of their own research. Therefore, less service need be provided by national agencies.

(3) Depending on the type of group, these would be served by various National Safety Council conferences, committees, or sections—Labor, Women, Industry, Farm, Church, Motor Transportation, etc.

(4) Depending on the type of group, these would be served by the Governors Conference, American Municipal Association, Mayors Conference, International City Managers Association, County Supervisors Association, etc.

ORGANIZATIONS REFERRED TO ABOVE

AAMVA—American Association of Motor Vehicle Administrators
AASHO—American Association of State Highway Officials
ABA—American Bar Association
A M. A—Automobile Manufacturers Association
A Mn. A—American Municipal Association
BPR—Bureau of Public Roads
C of SG—Council of State Governments
CUTAS—Committee on Uniform Traffic Accident Statistics
IACP—International Association of Chiefs of Police
ITE—Institute of Traffic Engineers
NEA—National Education Association
NSC—National Safety Council
NSC Conf. on Local Orgs.—National Safety Council Conference on Local Organizations
NSC PI Conf.—National Safety Council Public Information Conference

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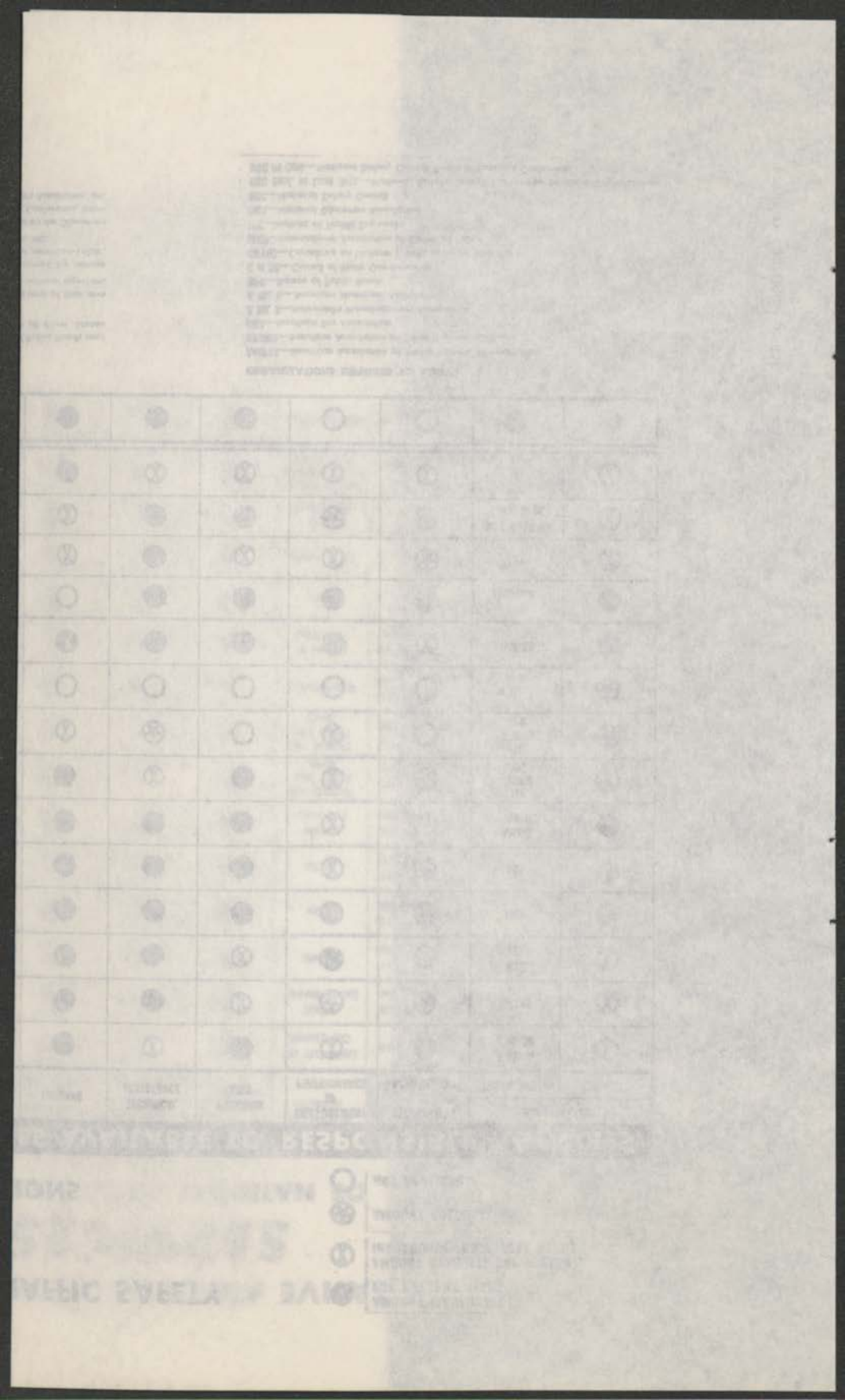

Service, but it does not in any way imply that there should not be other research facilities in other departments as may be appropriate.

For example, needs of the U.S. Bureau of Public Roads for engineering research facilities should receive attention at the proper time.

A further indication of the need for research was contained in an important report which the American Bar Association, Northwestern University and the National Safety Council jointly presented to this subcommittee in March of 1957.

The basic analysis of services of national traffic safety agencies has just been brought up to date by the Executive Committee of the Council's Traffic Conference meeting in New York, April 3.

I would like to supply the latest copy of the services chart for the subcommittee's records. The chart shows that research is inadequate even for present needs in such important matters as sound uniform laws, accident records, school programs, police traffic supervision, traffic courts, driver license, vehicle inspection, and public education. Research is judged to be inadequate for future needs in the important matters of highway engineering, traffic engineering, and vehicle engineering.

I hope that that chart can again be a matter of record with the committee as it was in 1957.

Mr. ROBERTS. Without objection, it will be included.

(The chart referred to faces this page.)

Mr. JOHNSON. In considering how some practical examples of research needs could be made most impressive to this subcommittee, it occurred to me that a few comments on research matters in the States represented by the subcommittee members would have particular interest.

Congressman Rhodes, as well as other members of the subcommittee, will recall that the State of Pennsylvania made a pioneering effort to utilize periodic medical examinations as a part of its program for driver improvement and control.

Now the Pennsylvania administration has found it necessary to at least temporarily suspend this program, and one of the underlying weaknesses was found to be the lack of adequate research to support medical standards for driver licensure.

In Congressman O'Brien's State of New York we have an excellent example of the value of an intramural research facility within State government. Dr. William Haddon on the staff of the State health department has conducted many studies and analyses found to be extremely valuable within State government in determining sound public policies; for example, in the important matter involving the drinking driver.

Congressman Rogers is perhaps familiar with the fact that in Florida, the U.S. Public Health Service has been able to make limited resources available for a Saint Petersburg study of accident problems in the older age group. This is an intramural accident prevention research facility, but its development has been greatly handicapped by lack of funds.

Congressman Schenck will be pleased to know that Ohio State University has just released a preliminary report of a very helpful study of the problems of slow-moving vehicles.

This project supported by the Automotive Safety Foundation will very likely produce a new and more effective warning sign to be displayed on slow-moving vehicles.

The Minnesota State Highway Department is using 1½ percent Federal highway aid money to conduct studies on accident prevention, and from the State of Minnesota, we have had strong support and cooperation, particularly from A. J. Schwantes, head of the Department of Agricultural Engineering, University of Minnesota.

Just a week ago in a meeting of the research committee of the National Safety Council, Dr. Schwantes again expressed his strong feeling that there is need for additional research in agricultural safety. I am confident that he could give Congressman Nelsen and the other members of this subcommittee an excellent appraisal of farm safety needs.

We have initiated a most interesting project in Colorado, a project which Congressman Brotzman and the subcommittee as a whole will, I am sure, want to follow very closely. This is a study of the effectiveness of safety communications. The National Safety Council and the Insurance Institute for Highway Safety are sponsoring this study.

We shall finance the preparation of a basic paper by Harold Mendelsohn, Ph. D., professor and director of research, School of Communication Arts, University of Denver.

This paper will be subjected to the critical review of 18 distinguished scholars in the field of communications. At a workshop scheduled for Denver in September, approximately 60 communications specialists will, then, endeavor to lay down guidelines for mass communication research on safety and to outline additional areas which require research and study.

Judging from the rather lengthy list of organizations which are cooperating in this study, there is widespread feeling that the guidelines developed are likely to be valuable in health and other fields extended well beyond the safety interest.

I submit for subcommittee reference a description of this study and call your attention to the fact that this is precisely the type of valuable assessment of knowledge which could be conducted by an intramural research facility and the facility would thereby play an important part in translating research into practical accident prevention measures.

(The material referred to follows:)

THE SAFETY COMMUNICATIONS STUDY

(Sponsored by National Safety Council, Insurance Institute for Highway Safety)

September 1962–September 1963

PURPOSE

There is an immense amount of safety information being disseminated in the United States. It is the Nation's most publicized cause.

Countless organizations have devoted themselves to this effort, utilizing many, varied, and often contradictory approaches. The total effort is characterized by an almost total absence of any kind of systematized safety communications approach.

The purpose of the study is to develop criteria (guidelines and standards) for safety communications. This task has never been undertaken. The final study report, to be published in book form, "Guidelines and Standards for Safety Communications," (working title) promises to be a landmark in communications.

PROCEDURE

1. Steering committee

A study steering committee will be responsible for planning, coordination, and management of the study. It will be composed of representatives of the sponsoring and cooperating organizations. One of the National Safety Council representatives, John Naisbitt, director of public information, will serve as study director and chairman of the steering committee. Staff work will be done by National Safety Council personnel, under the direction of the study director.

2. Research advisory committee

The following public opinion research specialists, among the most outstanding in the country, have agreed to serve on an advisory committee for the safety communications study. All are members of the American Association for Public Opinion Research (as is the study director).

Raymond A. Bauer, professor, Harvard Graduate School of Business Administration. One of the top social psychologists in mass communications in the country. Was head of mass communication studies with the Russian Research Institute at Harvard University. Is director of the Space and Society Division of the American Academy of Arts and Sciences.

Leo Bogard, vice president and director of research, Bureau of Advertising, American Newspaper Publishers Association. Formerly director of research, McCann-Erickson, Inc. Author of the standard text on mass communications, "The Age of Television."

Donald Cahalan, executive vice president, Nowland & Co., Inc., Greenwich, Conn., which is a marketing and communication research agency. Cahalan is a social psychologist who has worked in the field of communication research for 20 years. Recently he authored the paper "Motivational and Educational Aspects of Drinking-Driving."

Ira H. Cisin, director of research, George Washington University. Perhaps this country's top statistician in research design. Formerly director of Human Relations and Resources Organization.

Melvin A. Goldberg, vice president and director of research, National Association of Broadcasters. Formerly director of research for Westinghouse Broadcasting and Associate Director of Research for the U.S. Information Agency.

Samuel R. Guard, director of research, North Advertising Agency. Formerly research supervisor, Marplan, Inc., research division of Interpublic (McCann-Erickson).

Elihu Katz, professor of sociology, University of Chicago. One of the top theoriticians in the field of mass communication. He is author (with Paul F. Lazersfeld) of "Personal Influence," one of the landmark studies in mass communications.

Joseph T. Klapper, director of social research, Columbia Broadcasting Corp. Formerly director of communication research in the behavioral research service of General Electric Co. He has served on the faculties of the University of Washington, Stanford, City College of New York and Brooklyn Polytechnic Institute. He is the author of "The Effects of Mass Communications" (an analysis of research in the effectiveness and limitations of mass media in influencing the opinions, values, and behavior of their audiences), and is president of the American Association for Public Opinion Research.

Dean I. Manheimer, director of research, California State Department of Health. Formerly director of the Bureau of Applied Social Research, Columbia University.

Also:

Leonard Kent, vice president and director of research department, Needham, Louis & Brorby, Inc.

James L. Malfetti, executive officer, safety research and education project at Teachers College, Columbia University.

Irving S. White, director, Creative Research, Inc.

Harold Mendelsohn. (See footnote below.)

3. Initial stage (basic paper)

An outstanding public opinion researcher has been engaged to undertake the 8-month assignment of making a critical survey and analysis of the considerable public opinion research literature (well over 1,000 studies), relating it to the effective communication of safety messages, and the drafting of a basic paper on guidelines and standards for safety communications.[1]

This initial presymposium paper will deal with the avenues of communication (newspapers, magazines, radio, television, posters, face-to-face, etc.) and content approaches, including:

General vs. specific	Humor
Explicit vs. implicit	Threat-appeal (scare)
Order of presentation	Emotional vs. factual
Negative vs. positive	Repetition
Prestige-authority approach	Duration of effect
Slogans	Believability

The initial paper will be addressed to five objectives:

To develop a comprehensive bibliography of materials pertaining to the effective communication of safety messages (abstracted according to a standardized procedure using standardized criteria) and to establish a reference file on studies in this field to be used currently as well as in the future.

To describe critically the scope and depth of the current state of empirically derived knowledge relating to the effective communication of safety messages.

To generate principles of effective communications for safety and to document such principles from the research that has been done in the communications of persuasion.

To develop guidelines for programing in safety.

4. Developmental stage (critique papers)

In June of 1963, the basic paper, developed in the initial stage (above), will be sent to 18 specialists in the fields of social research, psychology, sociology, press, broadcasing media, advertising, and safety public information. (Accompanying the basic paper will be a background paper on the nature of the highway traffic safety problem—which will be given major emphasis in the study, outlining what we in traffic safety are trying to accomplish in terms of knowledge, attitude, and behavior.) Each of the 18 specialists will from his own perspective evaluate the basic paper and develop additional material.

5. Plenary stage (symposium)

A. *Participants.*—Symposium participants will be limited to approximately 60 traffic safety information specialists; communication theorists, researchers and academicians; and press and media specialists (from radio, television, newspapers, periodicals). It will include the 18 noted above. The symposium will be held September 16 and 17 at the University of Denver.

B. *Symposium format.*—All participants will receive the basic paper (and the traffic safety background paper) in June of 1963. All participants will receive the critique papers by September 1, 1963.

The symposium will be divided into three workshop panels meeting three times. Each panel will have approximately 20 participants, with balanced representation from the areas outlined above.

In each of three sessions of each panel two critique papers will be summarized by their respective authors, each to be followed by discussion. (Note that while during the symposium period, each panel will specifically discuss only six critique papers with the authors, all participants will have had a prior opportunity to read all 18 critique papers and can integrate the information accordingly.) Each panel will have a chairman and a secretary (to be selected by the steering committee.)

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[1] Dr. Harold Mendelsohn, Denver University, widely known and respected sociologist in the field of communications, has agreed to take on this assignment. Dr. Mendelsohn is professor and director of research in the Radio-Television Department of the University of Denver. Dr. Mendelsohn has had extensive experience in all phases of communications research as associate director, Marketing and Social Research Division, the Psychological Corp., associate director of marketing communications research, McCann-Erickson, Inc., advertising; research associate, Bureau of Social Science Research of the American University, Washington, D.C.; and as a survey analyst with the International Broadcasting Service of the U.S. State Department. Dr. Mendelsohn has written numerous articles on communications research and public opinion. His paper on evaluating the process of communications effect received an award for original research proposals recently from the Television Bureau of Advertising. Dr. Mendelsohn received the Ph. D. from the Graduate Faculty of the New York School for Social Research; the M.A. from Columbia University; and the B.S. from the City College of New York.

The symposium will conclude with a plenary session at which the three chairmen will report on their respective panel discussions.

6. Final report

The final report, to be prepared immediately following the symposium, will be a distillation of the basic paper, the background paper, the critique papers, and the panel discussion (all of which will be tape recorded). Working with a committee of the symposium, the study director will be responsible for the final report.

7. Budget

The approximate costs for the study are as follows:

Initial search and basic paper	$14,000
Travel and accommodations for 10 academicians	3,400
Honorariums for papers	2,500
Symposium accommodations	300
Mimeographed materials and postage	2,000
Other printing	1,000
Publishing of proceedings in book form	5,000
Presymposium meetings	700
Staff travel	1,500
Staff overhead	11,800
Miscellaneous	500
Total	42,700

Safety Communications Study Sponsored by National Safety Council Insurance Institute for Highway Safety in cooperation with—

The Advertising Council, Inc.
Advertising Research Foundation, Inc.
American Association of Motor Vehicle Administrators
American Association of Retired Persons
American Automobile Association
American Bar Association
American Cancer Society
American Heart Association
American Medical Association
American National Red Cross
American Newspaper Publishers Association
American Public Health Association
American Trucking Associations, Inc.
Association for Aid of Crippled Children
Association of American Railroads
Automotive Safety Foundation
Chamber of Commerce of the United States
Columbia University, safety research and education project at Teachers College
Council of State Governments
International Association of Chiefs of Police
National Association of Broadcasters
National Education Association
National Foundation
National Health Council
National Highway Users Conference
National Society for Crippled Children and Adults
National Society for the Prevention of Blindness
New York University, Center for Safety Education
Northwestern University, Traffic Institute and Transportation Center
Television Bureau of Advertising
U.S. Bureau of Public Roads
U.S. Public Health Service

Effective Mass Communication for Safety—A Critical Analysis of Pertinent Research

(A research prospectus submitted to the National Safety Countil by the University of Denver)

INTRODUCTION

In light of its ever-increasing activities in safety, the National Safety Council has commissioned the University of Denver to undertake a critical analysis of pertinent research in mass communications for the following purposes:

"To develop a comprehensive bibliography of materials pertaining to the effective communication of safety messages (abstracted according to a standardized procedure using standardized criteria) and to establish a reference file on studies in this field to be used currently as well as in the future.

"To describe critically the scope and depth of the current state of empirically derived knowledge relating to the effective communication of safety messages.

"To generate principles of effective communications for safety and to document such principles from the research that has been done in the communications of persuasion.

"To develop guidelines for programing in safety."

In addition, the study to be undertaken will serve as a position document to background a national conference on safety communications to be convened under National Safety Council auspices in the fall of 1963.

Finally, it is hoped that the study will serve to generate scholarly interest in the communications problems that are involved in producing and disseminating safety communication effectively.

The project will be carried out in two phases—an information-gathering phase and an analysis and interpretation phase.

Traditional techniques of library research will reflect the major effort in the information-gathering phase.

Supplementing the library research effort will be an attempt to uncover researches that have not been published but which have been conducted by business groups, welfare organizations, academic institutions, governmental bodies, and private research organizations. This effort will involve both formal and informal correspondence, meetings, and talks.

The process envisaged is one where one lead (e.g., an article containing a bibliography) points to others in sort of a snowballing effect.

At the point where information (1) begins to duplicate itself extensively and (2) becomes scant and extremely difficult to come by, further gathering of information will be discontinued.

All information is to be (1) noted, (2) cataloged, (3) cross-referenced, and (4) abstracted according to a standardized procedure using standardized criteria.

A filing system will be set up with an eye to (1) providing easy access to materials for the project and (2) to serve as a repository for future research efforts in the area of communicating effectively for safety.

Before undertaking an analysis of the material to be gathered, these works that are found to be irrelevant, based upon questionable methodologies, or merely confirmative of minute and specific findings that have been previously developed and elaborated upon will be excluded from the analysis.

The analysis and interpretation itself will be conducted within a general social psychological frame of reference that will seek to pull together variables relating to personality and social predispositions, perception, learning, motivation, action-disposition, and "effects" in terms of systematic organizing principles.

The analysis and interpretation phase will culminate in a full narrative writeup that will describe in detail the procedures adopted, the findings, the generalizations that emerge from the findings, and guidelines for possible actions.

To a great extent the project's success will depend on the cooperation of the many people who are concerned with the effective communication of traffic safety messages. To these people the study now turns for suggestions, ideas, comments and criticisms, and for sources of information and researches. All such will be received most gratefully.

AREAS OF INVESTIGATION

I. The need to define objectives for safety propaganda

All too often the objectives set for a mass communications program are unrealistic in terms of what they can actually accomplish. More often than not mass communications objectives either are not made explicit or are overambitious regarding the behaviors they can induce, maintain, or change.

Without explicit statements of communications objectives, it is almost impossible to evaluate whether communications under specific circumstances are effective or not.

Where explicit statements of objectives are available to guide evaluation, it is necessary to examine how realistic these objectives are in terms of our knowledge about the effects that can be produced by mass communications.

The study to be undertaken at the University of Denver will explore in detail the kinds of objectives that a program of mass communications in traffic safety can pursue with some promise of effectiveness. Within this rubric, careful consideration will be given to the following:

A. The complexes of variables, among which mass communications are but one, that can influence proper safety behavior.

B. The concept of the mass communications "campaign" and the accomplishment of short-term results as contrasted to the long-term persevering communications programs that can look forward to longer-range results.

C. Problems relating to gross saturation of mass audiences versus pinpointed communication appeal to specified subaudiences.

D. Problems relating to the creation of prior favorable climates of opinion that will serve to set the stage for greater ultimate receptivity of safety messages.

E. Problems relating to the "two-step flow" of communications from the mass medium source through the intervention of opinion leaders or peers to the ultimate message recipient.

II. The application of communication theories to mass communication for safety

A thorough critical review of theories in mass communication as they pertain to communication for safety will be undertaken.

Among the theories to be discussed, analyzed and assessed are the following:

A. Behavioristic learning theories as propounded by Miller, May, Dollard, and Lumsdaine.

1. Learning from the mass media results from four principal psychological conditions—motivation, stimulus, participation, and reenforcement.

B. Mechanistic information theories expounded by Wiener, Shannon, and Schramm.

1. Communication effect is a function of encoding, entropy, redundancy, noise, channel capacity, and decoding.

C. Barrow's relative potency theory. The effectiveness of a message is related to the power of its symbols to overcome "interference" and to be comprehended.

D. Lewin's field theory. If behavior represents a reorganization of the individual's perceptual or cognitive field then communication is capable of affecting such reorganization to some degree. According to the manner in which the field is organized, the individual will act.

E. Festinger's theory of cognitive dissonance. The existence of dissonance (i.e. inconsistency between the individual's beliefs, attitudes, values, etc., and what he experiences in the environment) is psychologically uncomfortable. Consequently where dissonance exists, the individual will either seek situations and information which will reduce it, or he will actively avoid situations and information that are likely to increase dissonance.

F. Mendelsohn's active response theory. Action-inducing communications are cumulative in their effects. Before action-inducing communications can influence behavior they must induce—cumulatively—learning, emotion, and action disposition among their audiences.

G. Personality Theories of McClelland and Atkinson. Stimulus strength (i.e. communications) must be related to individuals' motives and expectations in order to be effective.

H. Sociological "phenomonistic" theories of Klapper, Katz, Riley, Wright. Mass communications operate within a social nexus of complex variables. Consequently, where changes in taste, opinions, or behaviors are contemplated mass communications alone can be expected to be relatively ineffectual.

III. Audience characteristics and dynamics that may serve either to implement or to inhibit effectiveness in mass communication for safety

It is evident from past research experineces in mass communication that the audiences for various communications "select themselves out" in terms of prior interest, beliefs, attitudes, values, sentiments, group identifications, self-images, psychological "blocks" and the like. As a consequence, it has been noted that much public information and propaganda "falls upon deaf ears." That is to say, the very people who are considered prime targets for activation and conversion in most instances are least likely to be exposed to and to be affected by such communications. Thus, for example, we find in political campaigns that Democrats will tend to listen and react to the arguments propounded by the Democratic Party, while Republicans will be most likely to attend and react to GOP arguments; members of minority groups will generally attend and react to protolerance propaganda in far greater proportions than will those manifesting racial and ethnic prejudicies; the better educated rather than the poorly educated will tend to view "educational" television.

If this holds true for mass communication in traffic safety, it is altogether likely that the very group of drivers who contribute disproportionately to traffic accident incidence is the group that neither customarily exposes itself to sound traffic safety messages, nor reacts favorably to such message when exposure occurs either consciously or by chance.

This is not to say that the self-selection principle is "negative" to the point of rendering mass communication for safety hopeless. Here, it should be recalled that safety messages no doubt serve to reenforce those people who are normally concerned with the problem, and continual reenforcement is generally salutory. In addition, in supplying the interested and informed with salient information and arguments, these very groups (e.g. teachers) can be mobilized to "reach" the uninformed and disinterested indirectly via interpersonal channels of communication rather than directly through the mass media.

The study to be undertaken will be addressed to a thorough exploration of the self-selection principle as it appplies to the effective communication of safety messages.

Here attention will be given to the factors that influence audience interest versus apathy; to the problems of motivation; to the mechanisms of psychological defense against propaganda; and to the dynamics of "persuasibility"; to the dynamics of projection and "disidentification" (e.g., traffic accidents always happen to the "other guy"); to the influences of peer group pressures (e.g., nobody in my gang ever pays attention to those "square" speed limit signs); to the dynamics of cognitive dissonance touched upon above; to the possibility of overcommunication so that "being informed" begins to substitute for "doing something" about a phenomenon (i.e., the concept of the narcotizing dysfunction of mass communication); to dynamics of interpersonal dissemination of mass communication.

In addition, attention will be given to the differential mass media habits of teenagers, adult men, and adult women so that determinations of optimal media usage to reach subgroups can be made.

IV. The relative effectiveness of variant content approaches and appeals in mass communication for safety

Past research in mass communications has indicated that certain forms and techniques of content presentation appear to be related to persuasiveness. Among the more important and oft-discussed materials within this rubric are those summarized and discussed by Joseph T. Klapper in his book, "The Effects of Mass Communications" (p. 113):

"1. Presenting only one side of an argument, as compared with presenting both sides;

"2. Drawing explicit conclusions as compared to leaving the conclusions implicit;

"3. 'Threat' appeals;

"4. Repetition and cumulative exposure;

"5. 'Canalization' and providing release from tension;

"6. Order, emphasis, organization, and the like."

Although the University of Denver study will review these mechanisms and devices as they may apply to mass communication for traffic safety, it is planned to explore many other problems relating to persuasive content forms and devices.

For example, attention will be focused upon slogans, humor, literal versus fantasy treatment, the concept of brevity in relation to attention span, color, emphasis, vague versus explicit treatment, illustration, captioning, sound, analogy, generalization, exaggeration, exposition versus dramatization, audience benefit, layout, rational versus emotional appeal, testimonial.

Particular attention will be paid to attention-getting and attention-holding devices in terms of the dynamics of perception.

The presentation to be developed within the overall category of effective content approaches will be organized around a discussion of the concept of mass communication "appeals" plus an exploration of the necessity for the propagandist to assume and maintain control over his communication so that all elements of content are integrated to serve the specific objectives to which such content may be addressed.

ANALYSIS AND INTERPRETATION

The purpose of this study is not one of merely presenting the wide array of materials that is available in mass communication research. Such surveys have been done and have been done well.

Rather, it will be the purpose of this study primarily to draw upon empirically derived information with an eye to developing sound guidelines for the production of effective mass communications in safety.

The sources to be examined will be experiments, surveys, exploratory researches and descriptive researches that have been conducted in the fields of safety, psy-

chology, physiology, anthropology, sociology, propaganda, public information, education, advertising, and health. Particular attention will be given to case histories of pertinent mass communication programs, campaigns, and techniques that have proved to be particularly successful as well as particularly unsuccessful. Here, considerable attention will be given to detailed analyses of the factors that made for the successes and the failures for the bearing they may have on mass communication or traffic safety.

A byproduct of this study will be an examination of what is not known as well as what is known. Thus, the study will serve to codify our ignorance about areas in effective safety communications. Such a "codification of ignorance" should serve to focus future research attention upon significant problems calling for clarification as well as directing future research attention away from those problems about which abundant information already exists.

Analyses will proceed from statements of problems to the theoretical contexts from which they have evolved to the test hypotheses that they have generated to the empirical procedures that have been used to study them to the conclusions that have resulted from investigation to the pertinence of such conclusions for the effective communication of traffic safety propaganda.

Hopefully, this analytic system will generate patterns of insights that will be generalizable to communicating effectively for safety. These insights will be translated into principles that in turn will be synthesized into guidelines for communications actions to be contemplated by the various individuals and groups who are involved in communicating effectively for traffic safety.

Mr. JOHNSON. We have an example of the value of intramural research capacities in our own organization. We have one mathematician continuously assigned to the important matter of correlating and showing relationship between the present safety measures and the actual death rates obtained by the States.

This is a type of investigation which is practical only as a directed staff operation, inasmuch as the operating data are all a part of the continuing program of the National Safety Council.

This type of research project could not practically be assigned to a university. I know that similar needs to evaluate the effectiveness of State and local health department programs make mandatory the establishment of similar research facilities within the Public Health Service.

I conclude by again urging, on behalf of the National Safety Council, that the subcommittee amend H.R. 133, provide the U.S. Public Health Service with the research facility it requires, and I assure the subcommittee that we believe an amended bill will attract broad and widespread public support and can, in the years to come, reflect the greatest credit on the work of this subcommittee.

Mr. ROBERTS. Thank you, Mr. Johnson. I noted that in one portion of your statement, I believe, in connection with the Minnesota examples, you cited the fact that presently the highway department is using about 1½ percent of Federal highway moneys to carry on some of the studies that you mentioned?

Mr. JOHNSON. That is right.

Minnesota is typical of what is being done in, I believe, all of the States. I was given the information that they are using the 1½ percent funds to make a study of accident frequency in Minnesota counties.

They have a study underway on the relationship of driver age to traffic accidents in Minnesota, and they are conducting one study of farm tractor accidents upon the highways.

Mr. ROBERTS. Do you believe that H.R. 133 can be amended so as not to interfere with the functions of your organization?

Mr. JOHNSON. Yes, sir; I think that we outlined the points that we felt were objectionable last year and if those objections were considered and the amendments properly drafted, this would have our very strong support.

Mr. ROBERTS. Do you believe that these amendments would also protect other private nonprofit organizations engaged not in similar work, but in some phases of work in which the Safety Council is engaged in?

Mr. JOHNSON. Yes, sir; I believe so. If, for example, it were made clear that the research is in the medical, clinical, and behavioral sciences, this would also protect the statutory functions of other governmental agencies. It would meet the objections that some of the governmental departments have raised.

Mr. ROBERTS. Here in discussion, Mr. Nelsen referred to the farm safety problem. Do you believe that this type of research facility could be of some benefit in the field of accident prevention on the farm?

Mr. JOHNSON. Yes; I am quite certain it could and would. Our farm safety group conducted a special conference on farm research and outlined the kinds of projects that our farm conference feels need to be conducted.

The Department of Agriculture is a very prominent member of our farm safety conference and they endorse this statement of needs.

There are some kinds of research projects that can profitably be conducted by the Department of Agriculture but equally there are types of projects involving human factors that could well and should be conducted in a research facility by the Public Health Service.

I know as a matter of personal experience that the Department of Agriculture does not have enough money to do this kind of research nor does it have the assembly of skills, and they would have no objection.

On the contrary, I am sure there would be the strongest support for a Public Health Service attack on some of these problems that our farm conference outlined.

Mr. ROBERTS. Of course, in mentioning the contribution that is made by the 1½ percent of highway funds we talk, I am sure, about the interstate part, do we not, primarily?

Mr. JOHNSON. The Federal aid money?

Mr. ROBERTS. Do you feel that there is a great problem involving rural roads as far as the picture of highway traffic accidents is concerned?

Mr. JOHNSON. There are problems, engineering and other problems, in connection with the interstate system.

However, I think the problem that is perplexing to many of us today is the question of the rural roads off the State highway system.

As traffic steadily builds up, the secondary roads and the tertiary, the local rural roads, are carrying a larger and larger volume of traffic. It is a fact that these roads are under the jurisdiction of county highway departments and in some States under township road supervisors.

The engineering staffs of these ageciens are inadequate. They don't have the necessary budgets to do a proper job of signing. They don't use, in many cases, uniform signs.

We believe that a great deal more attention needs to be given, and I think this can come, particularly, through farm organizations,

to the fact that you need public support for a better traffic safety job at the county level, particularly in the rural counties.

Mr. ROBERTS. Do you believe that, if this bill were enacted with the amendments which you suggested, your organization could cooperate and work with such a facility and mutual benefit would be derived?

Mr. JOHNSON. I most certainly do.

Mr. ROBERTS. Thank you again, Mr. Johnson, for your statement, and I wish to have all of the exhibits included in the record, which Mr. Johnson amended to his statement.

Mr. Nelsen?

Mr. NELSEN. A question or two.

In the bill there are grants-in-aid for universities, hospitals, and laboratories, and other public and private agencies. In your judgment what is the more important, the grants-in-aid, or the accumulation of the information to make it available? Which of the two is the most needed endeavor as far as you feel in the safety program—the accumulation of this information, or additional money to colleges, universities, and what have you?

Mr. JOHNSON. The bill as drafted provides authority to make these grants-in-aid for research.

Mr. NELSEN. Yes.

Mr. JOHNSON. This authority the U.S. Public Health Service already has and that particular feature of this draft of the bill is, as I understand it, totally unnecessary. The critical need is for a research facility, which would mean that they would have on their own staff a corps of scientists who can then be directed to study a particular problem.

As research builds up from a variety of sources, we have gaps of information. Under the free and uncontrolled university research system, you cannot instruct the university to study this particular problem.

But when you have your own staff corps of scientists you can instruct them and direct them to analyze this particular gap.

Therefore, this research facility would be very important. Finally, to come to your last point, it is very important that these results be translated into practical administrative guides.

Mr. NELSEN. I know in your chart here that there are gaps. Almost every column indicates activity in some area, but there are gaps in individual areas. Overall, you find a pretty complete coverage, but the accumulation of this information and making it available is something that in your judgment is a necessity to make it available.

The reason I ask the question about the grants is that we are hearing bills every day to do very worthwhile things.

When we sit down and mark up a bill we have to take into account the overall picture and pick and choose a little bit. What I want to be sure we do is to make available services that are presently in existence and at a minimum of duplication.

I do feel that the accumulation of this information is important and, as has been pointed out, we have available funds for grants-in-aid in research now, and the main thing then could be the accumulation and correlation of this information.

I want to thank the gentleman for his great interest in this problem and we do appreciate the contribution that has been made by organ-

izations such as yours, and it is hard to beat things that are done on the basis of an organization such as yours with the contributions to the cause.

Thank you.

Mr. ROBERTS. Thank you, Mr. Johnson.

Mr. JOHNSON. Thank you.

Mr. ROBERTS. Because of the pressure of the House meeting at 11, and the fact that two of the witnesses on the list today are from this area, I am going to take next Dr. Albert L. Chapman, Director of the Bureau of Planning, Evaluation, and Research, Pennsylvania Department of Health, representing the Association of State and Territorial Health Officers.

Dr. Chapman had a long and distinguished career in the Public Health Service, was Chief of the Division of Accident Prevention before he left the Federal Government to join the Commonwealth of Pennsylvania and has been a leader in this field.

He is the author of a very fine book on this subject and has been one of the strongest supports of this legislation. I might say, Dr. Chapman, it is with great pleasure that we welcome you back to our hearings and we miss you. We hope you are happy in your present work and we are glad to have you.

STATEMENT OF DR. A. L. CHAPMAN, REPRESENTING DR. C. L. WILBAR, SECRETARY OF HEALTH, COMMONWEALTH OF PENNSYLVANIA, PRESIDENT OF STATE AND TERRITORIAL HEALTH OFFICERS ASSOCIATION

Dr. CHAPMAN. Thank you very much, Congressman Roberts.

Mr. Chairman and members of the Subcommittee on Health and Safety of the House of Representatives, I am Dr. A. L. Chapman, Director of the Bureau of Planning, Evaluation, and Research, of the Pennsylvania State Department of Health, formerly Chief of the Accident Prevention Division of the U.S. Public Health Service.

I am here today representing Dr. C. L. Wilbar, Secretary of Health of the Commonwealth of Pennsylvania and President of the Association of State and Territorial Health Officers.

Dr. Wilbar testified in favor of H.R. 133 to establish a National Accident Prevention Center last year and deeply regrets his inability to be here today.

The primary purpose of the proposed National Accident Prevention Center, as I understand it, is to mobilize personnel, facilities, and other resources that are needed to conduct research into the basic causes of accidents so that more effective counter measures may be developed.

Such research, both basic and applied, is clearly indicated if the present annual toll of accidental deaths and injuries is ever to be decreased.

Before the communicable and contagious diseases could be brought under control it was necessary to mobilize many kinds of researchers to identify the basic cause of each disease and to establish, beyond a shadow of a doubt, the way in which the disease was spread.

Prior to this scientific mobilization to combat the spread of epidemic diseases, smallpox, cholera, yellow fever, typhoid fever, and many similar diseases decimated community after community.

Today these once-dreaded diseases have been controlled but they could not have been controlled if necessary basic research had not been done to point the way to effective controls.

The situation facing this Nation today relative to accidents is much the same as the situation relative to the infectious and contagious diseases was in 1900.

Not enough is known about the basic causes of accidents—about the human factors that contribute substantially to the accident equation.

Essentially people cause accidents. Accidents don't just happen. Environmental factors, of course, play their part, but it is quite evident that a healthy, well-conditioned, well-trained person can perform with a remarkable degree of safety even in many unsafe environments.

Physical factors such as disease and disability have been indicated as important contributors to accidents.

Psychological factors such as various emotional states—anger, fear, grief, worry—have been blamed.

And physiological factors such as the effects of certain types of medication, fatigue, alcohol, and other toxic substances have been suggested as important causes of accidents.

All of these human factors have been indicated but their guilt has not been proven beyond a reasonable doubt, at least not to the complete satisfaction of many importantly placed decisionmakers.

Without such proof it has been very difficult to motivate public health administrators, public officials, and the public to support the types of actions that will be needed if the current epidemic of accidents is to be seriously challenged.

Needed proof can best be obtained through a concentration of research workers, laboratory equipment, and other resources in a national research center where scientists with various competencies and skills can work together, perhaps for the first time on a large scale, to discover what really causes accidents.

Then universities will be encouraged to conduct accident prevention research from which substantial new and applicable knowledge will emerge.

Once this vital knowledge about accident causation has been scientifically developed there is every reason to believe that it can be translated into action by various groups and agencies.

This application of new knowledge can bring about a dramatic reversal of present trends in accidental deaths and injuries.

One of the reasons why scientific research in accident causation has lagged behind research in heart disease, cancer, and other diseases, is that there have been very few places where a scientist could be trained to do accident prevention research.

A national accident prevention center, well equipped, staffed with senior scientists of repute, would provide an excellent training facility for future researchers.

It is absolutely essential to provide adequate research training facilities for researchers in accident prevention. Without such facilities accident prevention research on the scale of heart disease or cancer research will never be feasible.

During the past 30 years, due to the zeal and untiring efforts of the National Safety Council, State and local safety councils, police and

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fire departments, health departments, and many highly motivated individuals, accidental death rates have declined.

Over the years the accidental death rate has declined from a peak of 86.0 deaths per 100,000 population in 1917 to 52.3 deaths per 100,000 population in 1958. This represents a relatively small but still significant decline.

This decline was largely due to a drop in non-motor-vehicle accident death rates which fell from 78.2 deaths per 100,000 population in 1917 to 30.2 deaths per 100,000 in 1958.

Efforts to improve occupational safety have been unusually effective, particularly since World War II. Death rates from work accidents have declined steadily.

Motor vehicle death rates however, failed to follow a similar pattern. Since 1900, the steady increase in the number of cars on the road, the increased number of miles driven, and the increased speed and power of automobiles (coupled with the abuse of this power) combined to raise motor vehicle death rates to a level of 30.8 deaths per 100,000 population in 1937.

The reaction to this alarming rise in motor vehicle death rates was of sufficient magnitude to bring into being certain control measures which somewhat relieved the situation.

Motor vehicle death rates then dropped slowly until they reached a plateau between 21.0 and 24.0 deaths per 100,000 population.

Apparently the point of diminishing returns has now been reached. Until research on a significant scale provides a breakthrough, it is unlikely that any further significant drop in motor vehicle death rates can be expected in the near future.

In the development of solutions to any major public health problem, there are five steps that have to be taken. These steps are as essential in developing methods for controlling accidental deaths and injuries as they were in controlling typhoid fever and smallpox.

1. Data must be collected and analyzed. This data may be collected in the field or in the laboratory.

2. Apparent relationships must be critically examined by skilled scientists to discover causative factors.

3. Hypotheses must be developed based on these investigations and analyses. They must then be tested under scientifically controlled conditions.

4. Control measures can then be developed on the basis of proven hypotheses.

5. Finally, as control measures are proven to be effective in actual practice, they can be incorporated into effective control programs.

The economics of accident prevention suggests that additional financial support for research to identify the true causes of accidents, would be more in the nature of an investment than an expenditure.

The problem of accidents is a big and costly one. It involves over 90,000 deaths a year, 46 million accidental jnjuries, and an estimated cost to the Nation of well over $12 billion a year.

Contrasted to the high cost of accidents is the relatively small amount of high quality research that has been undertaken in this field.

I would like to read a brief statement by Dr. Ross McFarland, whom you all know so well, about the quality of accident research. It was contained in "Human Variables in Motor Vehicle Accidents: A Review of the Literature."

I quote, "A great deal of the published literature in the field of vehicular accidents represents a limited and, in many instances, a superficial analysis.

"A further defect of the literature is the high incidence of repetitious material, poorly controlled experimental studies, and oversimplification of the basic causes of accidents."

There are two obvious reasons for the inadequacy of accident prevention research today—lack of suitable facilities in which to conduct the complex, interdisciplinary type of research that is needed to effectively study accident causation and a lack of facilities in which competent research candidates can be trained to do accident prevention research.

The establishment of the proposed National Accident Prevention Center would go a long way toward filling this important gap in the Nation's research armamentarium.

Some reduction in the number of accidental deaths and injuries can be achieved by the conscientious application of the limited amount of knowledge now in our possession.

In Pennsylvania, for example, a 13-point safety program is in effect. Education is its keystone. An interesting and in some ways a unique facet of this comprehensive program involves the periodic physical examination of drivers.

By means of these examinations, drivers with certain major diseases or severe disabilities which render them unfit to drive are taken off the road.

Fourteen persons are now employed by the Pennsylvania State Health Department in its environmental safety program and the full-time position of traffic epidemiologist was established 5 years ago.

I mention these facts in passing as evidence of the growing interest in accident prevention on the part of many State and local health officers and practicing physicians.

If and when effective control programs are developed that are based on sound scientific research findings and investigations, I am confident they will receive strong support from and will be quickly applied by State and local health officers across the Nation with the support and backing of physicians.

In conclusion, I wish to thank you, Mr. Chairman and members of this committee for the privilege of appearing here today to endorse H.R. 133 and to assure you of the continuing support of the State and territorial health officers in the excellent effort you and your subcommittee are making to insure the safety of the American people.

Mr. ROBERTS. Thank you, Dr. Chapman. I am deeply grateful to you for your statement and for your continued interest in this field. You mentioned that in the overall picture, and I believe you singled out these by inferences, improvement has been made in industrial safety.

Why is it that we fail to have the same effort or motivation in the highway traffic accident picture that we have had in the industrial picture?

Dr. CHAPMAN. There are several factors there that are quite obvious, Mr. Chairman. One is that industry is in business to make a profit, and accidents decrease their profits.

Therefore, they have committed a substantial amount of money to research, experiments, and investigations in ways of making the job

safer to do. The result of this expenditure for research, and investigations, and experimentation in industry has paid off in providing a safer working environment; better education of the workers; and better motivation for the worker to behave in a safe fashion.

Mr. ROBERTS. I think that answers the question very well. Why is it that the same effort has not been made in the homes, do you think?

Dr. CHAPMAN. Industry is controlled in a very tight fashion. The American people live in a democracy and each individual has a right to decide for himself what to do or not to do.

Therefore, what he does is largely motivated by the leadership that is offered to him in his home locality. Today this type of leadership, the type that you find in industry, has been unavailable, plus the fact that the investigations and research in home safety have not been done that have been done in industrial and occupational safety.

Mr. ROBERTS. Do you think that the gap in the home safety picture would be somewhat filled by the creation of this type of research facility in the Public Health Service?

Dr. CHAPMAN. I have no doubt about it, sir.

Mr. ROBERTS. I believe that the last time you appeared with reference to this bill, Dr. Porterfield was with you, and I remember distinctly the part of the discussion which dealt with the setting up of poison control centers which has been a very fine effort.

I personally know of the tremendous contributions that these centers have made and the feeling of security that they give a family when the little one gets in touch with a poisonous material, or cleaner, or detergent of some kind.

Do you believe that this Center, as envisioned in H.R. 133, and some of the suggested aims, could operate to the mutual benefit of the public and also at the same time neither interfere nor infringe on the fine work that is being done by many private nonprofit organizations?

Dr. CHAPMAN. Yes, sir. I think you have evidence here today from Mr. Johnson's testimony that the mechanisms exist for coordinating the efforts of the various groups that are doing such excellent work in safety, investigation, and control.

I think the problem is a hypothetical one in that the resources today committed to the research and control of accidents are extremely small in relation to the size of the total problem they are trying to tackle, and I think that the mechanism exists for coordinating these efforts. The impetus should be less on keeping people from doing accident prevention that in increasing the contrbution of each of these groups in the accident prevention field with the necessary voluntary coordination that is now in evidence.

Mr. ROBERTS. Thank you very much, Dr. Chapman.

Mr. Nelsen?

Mr. NELSEN. I notice that the accident ratio was about 30.8 accidents per 100,000 population and that has now leveled off to 21 to 24 deaths per 100,000.

I wondered what is the percentage in Pennsylvania in view of your rather extensive program. Have you any figures on the Pennsylvania situation?

Dr. CHAPMAN. On the Pennsylvania situation?

I have data relating to motor vehicle death rates. These are considerably below average in Pennsylvania. In Pennsylvania in 1962 there were 3.9 motor vehicle deaths per 100 million vehicle miles.

In the United States as a whole in 1962 there were 5.3 motor vehicle deaths per 100 million vehicle miles.

Mr. NELSEN. Thank you. In the instance of Pennsylvania, to what do you attribute this remarkable achievement? The physical examinations, or examinations of automobiles, or highway construction? Have you any further analysis of that?

Dr. CHAPMAN. I would be remiss if I tried to inject my own personal thinking into the situation. However I could call attention to the fact, though, that great emphasis has been placed on highway safety in the State of Pennsylvania in the last few years.

A 13-point safety program has been set up. A great deal of educational work has been done. The State Police have begun to use radar. They have a no-fix policy on traffic tickets.

They have a program of examinations for drivers. They have taken many drivers from the road as a result of their admission to mental hospitals, or having epilepsy, or participating in traffic offenses which involve irresponsibility. I think all of these factors combined, have resulted in an improvement in the picture.

Mr. NELSEN. Physical examinations aside, do you find quite a large number of drivers that need to be removed from the road? Has that shown up as a very contributing factor in accidents?

Dr. CHAPMAN. Of the 1,438,000 drivers who were requested to be examined, 28,000 were not granted their licenses.

Of these, 5,765 returned their license because they wrote in and said in effect, "I am not fit to drive and I don't choose to be examined."

These 1,283 were rejected as a result of physical examinations and 6,603 had their licenses suspended after an accident, after admission to a hospital, or after a full special investigation. There is a big drop out from this program.

This not only involves those who are barred because of the examination, but also those who recognize they couldn't pass it and voluntarily turned in their licenses or those who for other reasons don't show up, sir.

Mr. NELSEN. On examination of motor vehicles, do you find a large number that are taken off the road as a result of the checking of the motor vehicles?

Dr. CHAPMAN. I don't have those statistics with me, but the number runs about parallel to the numbers in those States that have compulsory examination laws.

Mr. NELSEN. You mentioned the highway construction program and the safety factors involved in construction. I would like to call your attention to the fact that one of your top engineers is my uncle in the State of Pennsylvania.

Dr. CHAPMAN. We are very proud of the highway system in Pennsylvania.

Mr. ROBERTS. If he is doing his job as well as the gentleman from Minnesota does at shooting turkey, he is doing a good job. Thank you very much.

Dr. CHAPMAN. Thank you.

Mr. ROBERTS. We have had one bell, which signifies that the House is meeting, but the Chair is very anxious to try to finish today and I am going to ask the next witness, the Assistant Secretary for Policy Development and Research of the Department of Labor, Mr. Daniel P. Moynihan, if he would give us his testimony at this time.

Mr. Moynihan certainly needs no introduction in this field. He has worked at the State, private, and Federal level, is the author of very fine articles on the subject, and I think qualifies in this field and we are certainly happy to have you, Mr. Secretary.

STATEMENT OF DANIEL P. MOYNIHAN, ASSISTANT SECRETARY, POLICY DEVELOPMENT AND RESEARCH, DEPARTMENT OF LABOR

Mr. MOYNIHAN. Mr. Chairman, I know that you will be aware of the great personal satisfaction it is to me to appear before this committee of Congress.

I have followed your work for more than 5 years now. I have watched the careful, scrupulous, persistent and it is necessary for me to say fearless, manner in which you have approached a vast and incoherent, and singularly intractable subject.

You have done what no university, no Department of Government, has been able to do. You have quite transformed our understanding of the nature of the problem of accidental deaths and injuries.

It would be out of place for me, Mr. Chairman, to presume to commend you for your work, but as a sometimes professor of political science, I will say that students of American Government would find it instructive to contrast the results which your committee has obtained on the basis of a most modest expenditure of funds with the results of far more extensive efforts by agencies of local, State, and Federal governments.

As you know, sir, the administration has been most conscious of the work of your committee and most concerned to make use of the many insights which you have developed, particularly in the field of traffic safety.

During the 1960 presidential campaign, President Kennedy stated, and I quote: "Traffic accidents constitute one of the greatest, perhaps, the greatest, of the Nation's public health problems."

He added that the interstate highway program provides an excellent opportunity for the Federal Government to begin fulfilling its responsibilities in the field of highway safety."

As you know, the administration has since established the Office of Highway Safety in the Bureau of Public Roads, the Department of Commerce, and has moved ahead on many fronts against this pervasive problem.

H.R. 133, providing for the establishment of a National Accident Prevention Center, is, of course, identical to the bill with that number introduced by you in the 87th Congress.

Mr. Charles Donahue, the Solicitor of Labor, appeared before your committee on February 21, 1962, and stated that the Department of Labor had every sympathy for this important and salutary measure, as he described it.

On that occasion Mr. Donahue provided the committee with an excellent summary of the various responsibilities of the Department of Labor in the field of safety.

Secretary Wirtz has addressed a brief but similar statement to Congressman to Oren Harris, the chairman of the Interstate and Foreign Commerce Committee, and I will not burden you to repeat this material, but I will be pleased to answer any questions which may have since occurred to you.

I would like to address my remarks to the general problem of accident research as we in the Department of Labor see it, although not necessarily from the point of view of our departmental responsibilities.

One of the leading research scientists in this field, Dr. William Haddon, Jr., the Director of the epidemiology residency program of the New York State Department of Health, defines accidents simply as the "unexpected occurrence of injury."

He identifies two general classes of accidents:

First, those caused by interference with normal whole body or local body energy exchange. An example would be suffocation on the former level, frostbite on the latter.

Secondly, "the delivery to the body of amounts of energy in excess of the corresponding local or whole body injury thresholds."

There are at least five forms of this second class of accidents: Those resulting from mechanical energy, as for instance, motor vehicle accidents; thermal energy, as in second or third degree burns; electrical energy, as in electrocution; ionizing radiation, as an overdose of X-rays; and finally, chemical energy produced by the wide variety of chemicals developed by modern science or by the more classifical plant and animal toxins. (Poison ivy would be an example of that.)

When your committee first began to inquire into the subject it would have been necessary for a witness such as myself to say that while we know accidents will happen, just how often and to whom was a matter for considerable speculation.

This is no longer the case, thanks to the National Health Survey conducted by the Department of Health, Education, and Welfare.

In the period of July 1959 to June 1961, for example, some 44,995,000 members of the civilian noninstitutional population incurred injuries of one kind of another. About 18.8 million of the injuries occurred in the home, 8.1 million took place on the job, 4.7 million occurred in motor vehicle accidents.

It would appear that perhaps one person in five is injured in the course of the year. On the subject of the cost of injury, we are not nearly so well informed, even at the level of macroeconomics.

The National Safety Council estimates that the total cost of accidents and accidental injuries and deaths in the United States during 1961 was $14.5 billion.

This is a conservative figure, as it ought to be. The Safety Council is careful not to appear to exaggerate the dimensions of the problem in order to increase its importance.

The amount of $14.5 billion represented 2.8 percent of the gross national product of the United States in 1961. Our inclination in the Department of Labor would be to raise that amount to at least 3 percent of the GNP.

I don't have to point out to you that for the period 1957 to 1962, the annual increase in GNP was running at only 3 percent a year: accidents were in a sense depriving us of our growth, or much of it. I would also add that $14.5 billion, the low figure I mentioned earlier, was in excess of the total expenditure for research and development by Government, industry, and nonprofit institutions in that year.

It was only slightly less than the expenditure for all new buildings, and about equaled the purchase price of all new and used cars.

Accidents are very much a household problem for the Federal Government. We have some 110,000 injuries a year reported under

the Federal Employees Compensation Act, which is administered by the Department of Labor.

Last year we expended $46 million from the compensation fund for injuries to Federal-civilian employees. We have reason to believe that the number of injuries that occur is greater than those that are reported.

For example, in the Post Office in fiscal 1962, their Safety Division reported 84,000 injuries for its employees, although only 49,000 were reported under the Compensation Act.

This would mean that one postal employee out of seven was injured on the job during this period.

Studies by the Department of the Interior indicate that indirect costs of injuries are at least equal to the direct costs. In the Department of Defense, accidents are a problem of considerable proportion, as you would expect.

It would appear that in 1960, the overall cost of accidental injury and death to active-duty military personnel and their dependents was in the neighborhood of $285 million.

Property damage cost would double this figure, so that the total would amount to something like 1 percent of the Defense budget. Injuries and deaths to active-duty personnel only in motor vehicle accidents came to $83 million, in direct costs, with property damage probably an equivalent amount.

In general, something like half the total cost of accidents is accounted for by motor-vehicle accidents. Our information about the cost of motor-vehicle accidents is by no means complete or adequate, but the problem is so large that a fair idea of its dimensions can be had.

In the course of the next 5 years, which is 1963 to 1967, inclusive, we would be willing to predict that the total cost of motor-vehicle accidents will come to some $42 billion.

Something like 190,000 to 195,000 persons will be killed and considerably more will be disabled.

The question of concern to this committee is what to do. We know about the cause of accidents and what are we likely to learn about the cause of accidents and what are we likely to learn about their prevention?

I reply that quite a bit is known about accident prevention as an applied technique, and the record of industrial safety quite substantiates this fact.

However, very little is known about the etiology of accidents and it would be my judgment that the absence of basic research data on this subject is now beginning to retard our progress.

We have gone about as far as you can go in the "hard hat and goggles" approach to the problem. The next breakthrough will require a far more sophisticated understanding of the nature of the problem.

I would judge that at least two factors can be identified which have held us back in this field. The first is that while we define accidents as unexpected events, they do in fact, seem to have an explanation. Most of these explanations are tautological: You say, "I fell because I slipped," but somehow they satisfy curiosity and they allay fear. The nagging sense of mystery and of danger which led men thousands of years ago to begin the study of infectious diseases, has simply not grown up around the subject of accidents, even though the morbidity

and the mortality resulting from accidents is just as real as that resulting from infectious diseases.

The second factor that I would identify is probably related to the first. The study of accidents has so far attracted only a very few persons from the learned professions. The result is that so far very little has been learned about the subject.

Here and there the field of accident prevention has touched upon the data of a recognized profession and almost always with excellent results.

As Congressman Nelsen would agree, the highway engineers have performed miracles by the simple application of the rigorous standards of their calling.

These standards provide for elaborate methods of analysis and testing and, most importantly, for strict accountability for failure.

Should a major bridge on the interstate highway system collapse one night, you can be sure that the engineering profession will in short order determine why it happened and who was responsible, but if the traffic safety campaign should fail utterly to achieve its announced objectives, the likelihood is not a word will be said about it.

Indeed, the authors are likely to continue to take credit for their efforts as if the campaign had been a vast success. There is simply no tradition of self-criticism in this field. Without that criticism there is unlikely to be much progress.

Traffic safety happens to be the area in which most accident prevention activity has occurred, therefore, it provides most of the bad examples. Let me cite an important one here. Highway accidents began to be a significant source of morbidity and mortality in the United States about one half century ago. About a generation ago, they reached epidemic proportions and have continued at that level since.

In an effort to keep with the problem, for little more than a generation agencies of local, State, and Federal Governments have been compiling statistics about accidents, injuries, and deaths with a diligence and industry seems to grow as the years go by.

But that has been an almost wholly uncritical effort. As a result, it has been almost wholly useless. It is my impression, and it is the firm opinion of research workers for whom I have the greatest regard, that with perhaps one or two exceptions all the vast accumulation of data about automobile accidents over the past half century has contributed almost nothing to our understanding of the cause and prevention of accidents.

It is worth calling to the attention of the committee that it was only 3 years ago that the first scientific information about the nature of pedestrian fatalities was published in this country, and this information was obtained by the deceptively simple process of stopping some 200 persons who happened to be walking the streets of New York City at certain times and places.

There are not more than a handful of research reports in this field of the quality customary in other scientific fields, and almost all of these have been developed by non-Government groups, generally using non-Government data.

(Here, I would exclude the Cornell Crash Injury Research Studies, which are perhaps a special case.) The general rule may be laid down that in no field that I know of, is the disproportion so great between

expenditure on data collection and similar efforts and the production of scientific acceptable results.

Just to intercede with one point, it is not just that I feel that we neven't learned anything from this data collection process. This is a more serious matter than simply the failure to obtain new information. I fear that we have been mislead by such data, and we find ourselves in the position described by the old saying that, "It's not ignorance that hurts so much as knowing all those things that ain't so."

Accident statistics have, for example, shown that some drivers have more accidents than others, which has led most Government agencies in this field to assume there is something special about the multiaccident drivers, although in fact, most of them may be nothing more than innocent victims of the Poisson Distribution.

The simple fact is that data collection is not research. The collection of undependable data is not much of anything.

However, the great bulk of our expenditures in this field for half a century have been confined to this area. I believe the committee would be alarmed to learn how meager are the efforts we make in other directions.

The best information obtainable by the Bureau of Labor Statistics is at the present time in the United States there are only about 50 competent researchers engaged in basic research in the accident prevention field.

The National Safety Council, for example, has on its staff only two persons engaged full-time in accident research and only one of these persons is presently a Ph. D. The other will be.

These are very scarce people to come by. This brings me to the subject of a National Accident Prevention Center. As you know, Mr. Chairman, within the administration, there are people who are anxious to see progress in this field who are as yet uncertain as to what precisely would be the best institutional arrangements for making such progress.

I would prefer to leave that to persons better qualified than I to judge such matters. However, I do most emphatically wish to support your concern that something be done.

The Nation needs a center of some kind where persons can be trained and gain experience at the professional level in the field of accident prevention research.

If we are to get past the 50 mark, as it were, such an effort must be made. I assume further that such an effort must be directly related to the medical profession, as much as this may pain our friends in the behavorial sciences, although they, of course, will be much involved.

It is my understanding this view is held by a significant number of medical doctors, although I cannot attest to that statement.

I would, however, quote Dr. Haddon once more who wrote recently:

> The time has come to stop regarding injury causation and research as somehow mystically difficult and different from the sequences with which we have long successfully dealt in the infectious disease and other areas, since there is no convincing evidence that this is the case other than its frequent assertion.

It would be my hope that agencies such as the Department of Labor would become much involved in assisting in such research and also that we would have even a larger role in applying the results.

I would ask the forbearance of the committee to expand for just one last moment on these possibilities.

Two items. First, an example from the field of traffic safety. One of the most pressing concerns in this field is that of the design of passenger cars. As the committee has abundantly demonstrated, very little is known about the relation of design to accidents and injuries. We do know that in 1960, for example, I believe the number is nearly one licensed motor vehicle out of seven was involved in a traffic accident.

Last year, your committee heard testimony that between one-quarter and two-thirds of all automobiles manufactured in the United States are sooner or later involved in a personal injury accident.

We have also recently had an excellent study that indicates compulsory motor vehicle inspection may significantly reduce accident rates.

All these factors point to the probable importance of automobile maintenance.

Now, there were in 1960, some three-quarters of a million automobile mechanics employed in the United States. About a third worked in the service department of new and used car dealers. Another third worked in repair shops. The remaining third worked in gasoline service stations, for manufacturers, and others.

Over the next decade, we will have to train between 350,000 and 400,000 new mechanics to make up for natural attritions and to provide for the increase in the total number of motor vehicles at a ratio of 1 mechanic for about every 90 vehicles.

It is an interesting fact that, while we have very high standards of apprenticeship and licensing in service trades, as plumbing and electrical work, in general, these requirements have not been adopted in the field of automobile maintenance.

But this surely should not mean that we have no established standards whatever, although I fear this is generally the case.

It seems to me, therefore, that it would be an excellent thing if we were to learn more about what is now the level of training of automobile mechanics and what, if any, public standards of training ought to be set.

I would think we ought to also learn a great deal more about the relationship of automobile design to efficient maintenance in terms of the skills and training of the mechanics' work force.

Is it possible, for instance, to mass produce automobiles that require more maintenance skill than the current work force possesses? If so, ought we to change the design, retrain the work force, or both?

These are questions where basic and applied research meet. I am sure the Department of Labor would be most interested to join in a study of this kind insofar as it concerns the Manpower Development and Training Act, the occupational safety movement, and, of course, Federal Safety Standards.

The Department of Labor would also, for example, be most interested to learn more about the problem of injuries to older workers.

In his recent message on aid to our senior citizens, President Kennedy expressed the concern of the administration that older workers be permitted to continue in employment as long as they needed and wished to do.

He said, "Denial of employment opportunities to older persons is a personal tragedy. It is also a national extravagance, wasteful of human resources."

If we are to carry out this policy, it would seem most important to learn more about accidents to older workers, of which falls are a major category.

Mr. Chairman, I have burdened you with more statistics than are perhaps necessary. This is an occupational hazard of Department of Labor employees.

I do, however, trust that these have given you some further assurance that you are directing your attention to a problem of massive proportions.

No one can say for certain to what extent the problem can be diminished.

However, it seems to me that we have every reason to hope that it will. To cite a possibility, I can conceive that 15 years from now, Americans will look back at the problem of motor vehicle accidents today much as we look back at the epidemics of influenza and cholera which once took such a toll of life in an earlier America.

It may be we are poised here at the beginning of a great new branch of medicine, of science, and of the art of controlling man's environment.

If that proves to be the case, the Nation will be permanently in your debt.

Thank you very much.

Mr. ROBERTS. Thank you, Mr. Secretary.

We appreciate your statement and especially I appreciate the complimentary remarks you made about the work of our subcommittee.

It is an area where frustration is the rule and not the exception. It is heartwarming to hear a person of your experience and stature express an opinion that we are some day going to find some answers in this field.

This is the second quorum call and I would like to continue this afternoon with the hearing.

I know you are very busy and I am not going to ask you to come back for questions, but I will try to get permission for the subcommittee to sit here this afternoon.

We will try to resume our hearing at 2 o'clock in the same hearing room.

Mr. Nelsen?

Mr. NELSEN. No questions.

Thank you very much.

Mr. ROBERTS. Thank you, Mr. Secretary.

(The following information was submitted for the record:)

STATEMENT ON BEHALF OF THE AMERICAN OPTOMETRIC ASSOCIATION BY MERRILL J. ALLEN, PH. D.

Mr. Chairman and members of the committee, my name is Merrill James Allen. I am professor of optometry at Indiana University, with the faculty of which I have been associated since the division of optometry was formed in 1953. I am a native of Texas, obtained my preoptometric education at Texas University and my professional education in optometry at Ohio State University. I was awarded my bachelors degree in 1941, masters degree in 1943, and Ph. D. in 1949, all from Ohio State University. My education was interrupted by 2 years of duty in the Navy, first as a seaman second class and later as ensign and lieutenant (j.g.). I now hold the rank of lieutenant commander, U.S. Naval Reserve.

During the past 4 years I have been engaged in research under a Public Health Service grant to study children's vision and a 5-year Air Force contract to study certain accommodation problems of vision. In 1960 I conducted a 1-year study for the Air Force on visual performance and high luminosity connected with various ophthalmic filters. Last year I was appointed director of research for the American Optometric Foundation motorists night vision research grant to Indiana University.

In addition to my membership in the American Optometric Association, I am a member of the American Academy of Optometry, the Association for Research in Ophthalmology, the American Association of University Professors and the American Association for the Advancement of Science. I have designed marketable instruments for vision testing, teaching, and recording. I have authored more than 65 articles dealing with various aspects of visual research which have been published. My activities include lecturing and television appearances in this country and one for the Canadian Broadcasting Co. Much of my time has been devoted to research in the field of accident prevention, particularly that having to do with automobile accidents.

My appearance is on behalf of the American Optometric Association. Last year V. Eugene McCrary, O.D., now a trustee of that association, testified in support of a similar bill with the same number, then pending before the 87th Congress. His testimony is available to this committee and I shall not repeat it.

Our association's interest in accident prevention covers practically the entire period of its existence. At the present time it has committees dealing with the subjects of occupational vision, which is particularly concerned with accident prevention in industry, a committee on visual problems in aeronautics and space, another on visual problems of children and youth, and also the committee on motorists vision and highway safety which is vitally concerned with the visual problems which confront the motorist. Our activities in this particular field have been outstanding and in 1960 the association received the United States Chamber of Commerce Award for Public Service Activity by Associations, based upon our contribution to traffic safety.

Like many national organizations, the wives of our members have organized what is known as the auxiliary. This group has collected money, conducted educational programs and jointly with the All State Foundation, conducted three colloquia at Michigan State University, the first in 1960, the second in 1961 and the third last year. All of these have been well attended and publicly acclaimed for the contribution to highway safety as affected by vision.

We have a six-point program which, if fully developed, should greatly reduce the terrific toll of life, physical suffering, and property damage resulting from the use of motor vehicles on our highways. Before outlining this program, let me assure you that only a very small percentage of the individual automobile drivers will be denied their licenses. Our premise is based upon the education of the driver, an adequate examination of his visual capabilities with correction where it is needed, the improvement of the vehicle, its lighting both interior and exterior, and road markers.

Specifically, the six points in our program are—

1. Driver education and licensing.
2. Visual fitness of the operator, with periodic physical reexamination.
3. The effect of alcohol, pep pills, tranquilizers, and antihistomines on the driver's vision.
4. The effect of speed and fatigue on vision.
5. Lighting, both interior and exterior.
6. The effect of aging.

In some of these fields considerable work has been undertaken but in others it is largely in the planning stage. In all of them further work remains to be done. Only last December the Journal of the American Optometric Association carried a series of articles which included "Survey of Research Pertaining to Motorists Vision" by Sidney A. Mintz, O.D., a member of President Kennedy's Traffic Safety Committee and also the association's committee on motorists vision and highway safety; also one of my articles on "Certain Visual Aspects of the Average American Automobile"—report of a study conducted under the American Optometric Foundation motorists night vision research grant to Indiana University. These two articles and the editorial concerning them, I would respectfully suggest be made a part of the hearing sof this committee. Last December Time magazine did me the honor of devoting a column in its December 21 issue pertaining to my studies on automobile design as related to vision.

Another one of my articles appeared in the February 1963 issue of the American Journal of Optometry and Archives of the American Academy of Optometry. This has to do with "Visual Environment for Daytime Driving—Daytime Automobile Windshield and Dash Panel Characteristics." I have a copy of this article, which I will leave with the committee for such use as they may desire to make of it.

I have also brought with me Bulletin 336 of the Highway Research Board entitled "Night Visibility," 1962, published by the National Academy of Science—National Research Council. You will note that seven members of the committee are members of the optometric family and three of them are members of faculties of our schools and colleges of optometry. Another is a former chairman of the association's committee on motorists' vision and highway safety. You gentlemen might be interested in the articles entitled "Lenses for Night Driving," "Vision at Levels of Night Road Illumination" and "Transient Adaptation of the Eyes of a Motorist."

Three great areas of research in the visual aspects of motoring need to be pursued.

First is the matching of man and machine for optimum performance. Auto vehicles are the way they are, from the visual engineering standpoint, because there has been inadequate communication between the vision laboratory and the automobile manufacturers. Instrument panels are poorly displayed, improperly lighted, and beset with glare objects. Windshields include distortion, some absorb too much light, and some have annoying internal reflection most visible at night. Most provide unneeded glare from adjacent surfaces that are too highly reflective, and some permit unnecessary sky glare. The obstructions to vision of the highway scene are amazing, and include corner posts, steering wheels, rear view mirrors, exaggerated front body contours, lowered side door tops, severe distorton, and a multiplicity of accessories such as compass, baby shoes, religious figurines, fox tails, cottonballs, etc. etc.

The position of the eyes in the car varies from some drivers peering beneath the steering wheel to others crouching to see below the top of the windshield. In addition, the option is permitted of sitting with one's head practically touching the left door, so that the left corner post is almost in the center of the field of view.

The second area is the evaluation of signal and running lights from the point of view of information content, confusion, the possibility of actual accident causation from unsuspected faults inherent in the present system, and the problems of poor atmospheric visibility.

The third area is that concerned with the human element in driving. This includes research into the problems of poor vision, monotony, fatigue, hypnotic effects, distractions, and the qualifications for driving day or night. The human variable on the highway cannot be overlooked, and though much is known, much more work needs to be done.

At the present time much emphasis is being directed nationally toward simulators that provide opportunities to study the entire driving situation. This needs to be done, as it represents a possible sophistication over the step-by-step laboratory approach. However, before total driving simulators can be of real use, they must be based on a sophisticated automobile that has been corrected for its known visual faults as learned from simple laboratory experiments. To use a simulator based on our present driving equipment is merely a costly and difficult attempt to reproduce the simple laboratory experiments, many of which have already been done, and their result could be applied directly to driving.

We at Indiana University Division of Optometry are programing simulation experiments at the present time to study fog lighting problems among others. These experiments are not contaminated by an effort at total simulation of the driving act; hence, the data are easily analyzed and cheaply obtained. Other studies underway, also supported by the American Optometric Foundation, include the influence of chromostereopsis on night distance judgment, windshield distortion, dash panel visibility, auxiliary lighting for increasing night driving visibility and improved signals for fog.

We have neither the funds nor the manpower to undertake research in the areas of total simulation nor in many of the problem area topics mentioned in the preceding six paragraphs. People are being killed every day because of insufficient research on the visual aspects of driving and the proper application of that research.

I am convinced that failure to see an accident developing is not just a human failure, but is a combination of factors so complex that a tremendous effort in the laboratory and in industry will have to be made to solve it. Success can mean that many of us, now destined to become merely a highway statistic, can be spared.

I am also leaving with the committee a booklet published by the association on the subject of "Vision and Driving" the author of which is Robert C. Sneller, O.D. who was then chairman of the Committee on Motorist Vision and Highway Safety and is now trustee consultant to that committee.

You might also be interested in the national survey of automobile drivers vision which was undertaken by our association and is still in progress. The descriptive folder, with its contents, is here for your use.

May I call your attention to five of the important vision skills one needs for driving:

1. *Distance acuity.*—Ability to focus and see clearly with each eye separately and both eyes together, particularly at a distance of many feet or yards. Probably the most important vision skill for driving, it is essential for seeing danger, reading road signs in time and for general adaptation to driving conditions.

2. *Depth perception.*—Ability to correctly judge distances between yourself and other objects, especially when both are in motion. This is essential for passing other cars in the face of oncoming traffic and for maneuvering from one lane to another among moving vehicles on streets and highways. Deficiency in this skill is one of the most common defects found among drivers.

3. *Field of vision.*—Ability to see over a large area without moving either your eyes or your head, sometimes called "looking out of the corners of your eyes." This, of course, is needed to detect crossroad traffic, pedestrians at the roadside or intersections, to check traffic at your rear through mirrors and to get the general driving picture.

4. *Muscle balance.*—Ability to point your eyes simultaneously with ease at a given object. This is essential for good two-eyed vision, acuity, depth perception and field of vision.

5. *Night vision skills.*—The ability to see under low illumination beyond the range of your own headlights, ability to see against glare of oncoming headlights, and the ability to recover quickly from glare afterwards. Night vision depreciates rapidly after 40 years of age. Inadequate night vision largely accounts for the greater number of accidents which happen at night than during the daytime.

A recent test with screening instruments of the vision of 3,000 drivers in 25 States conducted under the auspices of our association indicates that 1 out of every 5 drivers, with or without glasses, has at least one vision defect which affects safe driving. And millions of these drivers are unaware of their shortcomings.

Distance acuity, one of the most important vision requirements for safe driving, can be corrected, if defective, through eyeglasses in most cases. Only a few drivers cannot have their distance acuity raised to a safe level through professional care. Other defects can either be corrected or compensated for if the driver knows his shortcomings.

Some eyeglasses prescribed for other purposes are not suited for driving. In such cases a special prescription can improve the driving vision of the wearer.

There are two other areas in addition to traffic safety to which we would call your attention, namely accidents involving children's vision and those involving the aged.

The optometric profession, proud of the contribution which it has made and is now making toward accident prevention on a nationwide basis in all areas. At the same time we realize that much remains to be done and would be happy to serve the Nation through a National Accident Prevention Center if Congress authorizes one to be established. We have no fixed position as to whether it should be made a part of the Public Health Service or whether it should function under some other Government agency. Our main concern is that the visual factors that contribute to accidents should be reduced to a minimum, thereby minimizing it as a contributing factor to our accident toll.

In conclusion, permit me to assure you that our profession will continue its service in the interest of safety. It has been a privilege to appear before this committee. If there is any additional information you desire, I will be pleased to furnish it.

[Presented before the Night Visibility Committee of the Highway Research Board, January 1963, Washington, D.C.]

The Relationship Between Night Driving Ability and the Amount of Light Needed for a Specific Performance on a Low Contrast Target

(By Merrill J. Allen, O.D., Ph. D., and William M. Lyle, O.D., M. Sc., American Optometric Foundation Motorists Vision Research Grant, Division of Optometry, Indiana University, Bloomington, Ind.)

That many people have difficulty seeing at night often has been noted and it is gratifying to know that many drivers will not drive at night because they believe they do not see as well as they should.

It has recently been shown (1, 2, 3) that the transmission of the eye is progressively reduced with age, see figure 1(1). This coupled with the reduction in the average pupil size with age can produce a marked reduction in retinal illumination in the older driver. It may be assumed that a specific level of retinal illumination must be maintained at all ages for some standard level of highway night visual performance. Inasmuch as individual differences preclude a prediction of visual performance, it is desirable to measure any loss by some easily administered test. The results of such a test, if expressed in the amount of light needed for a specific visual task can be meaningful to lighting engineers, legislators, automobile licensing agencies, insurance agencies, ophthalmic practitioners, etc. Such a visual performance test would automatically include the effects of scatter and absorption in the ocular media and retinal layers, and the effects of optical irregularities and errors of refraction. Other factors such as the level of adaptation, etc., would also be included.

The test reported here consists of four lines of letters. The top two lines of letters subtend an angle of 10 min. at 3 meters (equivalent to 3/6 Snellen notation). The bottom two lines of letters subtend a visual angle of 5 min. at 3 meters. The second line of large letters has a contrast of 10 percent. The last line of small letters has a contrast of 20 percent.

An 11-inch square photographic film is transilluminated by two 60-watt tungsten lamps in a light box. An opal plastic sheet diffuses the light from the bulbs before it reaches the film. To minimize the effect of room illumination, a 20 percent transmission gray filter covers the photographic target. The luminance of the letter background with filter in place is variable from zero to 100-foot lamberts. A photographic light meter was inserted into a hole in the side of the box to measure the light level. By measuring the light level directly, the electrical circuitry needed is greatly simplified.

An effort was made to evaluate the influence of several variables using this test as a measure of visual performance. Since we already know many of the visual factors and their interrelationships (1, 2, 3, 4, 5, 7), the purpose of the data obtained here is to determine the ability of this instrument to make such measurements.

The way in which refractive errors affect night visual performance is seen in figures 2–5. It is apparent that optimum performance with the least light is obtained within only a short range of dioptric powers. The curves are labeled to indicate 5 min. test letters (20/20); 10 min. test letters (20/40); 100 percent contrast (high); 20 percent contrast (20/20 low); and 10 percent contrast (20/40 low). For each trial lens the illumination was increased until the particular line of letters could be read. Luminance levels in foot lamberts are obtained by multiplying the ordinate scale values by 0.22.

In figure 4, the wide range of acceptable lens powers as well as the erratic performance of this subject result from his large monocular amplitude of accommodation. When he was required to maintain binocular vision (fig. 5) as he would while driving, his performance was generally better, but over a much smaller lens power range. This is explained by the normal interrelationship between accommodation and convergence.

Figures 6 and 7 show the effects of pupil size upon the light needed for the various visual targets. The pupil diameters on the X axis are arranged according to their squares (area). The need for more light with pupils below 3 millimeters is most evident. Patients being treated for glaucoma with miotics will be handicapped as indicated, due to the resulting pupillary constriction. On the other hand the failure to accept less illuminance with pupil sizes larger than 3 millimeters is undoubtedly due to the aberrations introduced (akin to fig. 2–5) and to the presence of a Stiles-Crawford effect in photopic vision which reduces the efficiency of the rays from the margin of the pupil.

In order to determine the characteristics of the population as measured on this apparatus, 12 instruments have been built and are being used routinely in optometric offices on adults of driving age. So far the few results obtained show an age dependency as one would predict, and even show some correlations with some of the questions being asked of these people. Figure 8 is the questionnaire used. Each answer choice has a number value which is used in totaling the score. Since a great deal of data is expected in the next few months, further comments are out of place at the present time.

SUMMARY AND CONCLUSIONS

A test is described and results presented to show that this instrument is capable of measuring at least two of the several factors that can increase the need for greater task illumination. The 10 percent contrast test letters perhaps best simulate the contrast of objects often encountered at night. The 20/40 level is representative of vision requirements of most drivers' licensing agencies. The brightness levels at which these letters can be recognized with an optimum visual apparatus are not far removed from those being contemplated and actually used in highway lighting systems (6). Even a moderate visual impairment will likely necessitate an increase in the illumination required to see a low contrast object on the highways at night to amounts above those currently available.

From the work of other investigators and from the data presented here, one may conclude that a less than optimum visual apparatus can perform satisfactorily with sufficient light. The conditions for drivers visual acuity testing provide high illumination and high contrast and cannot be expected to indicate poor nighttime visual performance. Indeed if a person barely passes the regular 20/40 test, he must surely have a very poor visual performance at night, whatever may be his visual disability.

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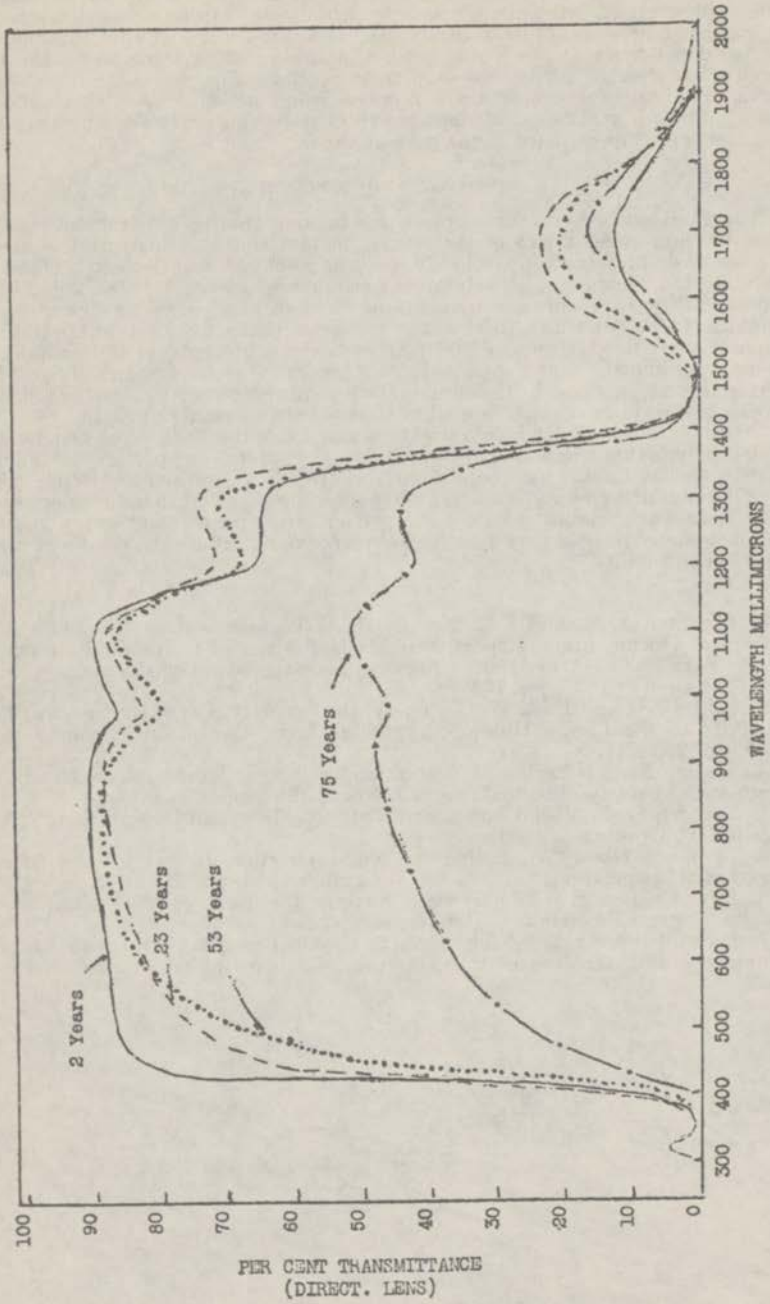


FIGURE 1.—TRANSMISSION OF THE EYE

FIGURE 2

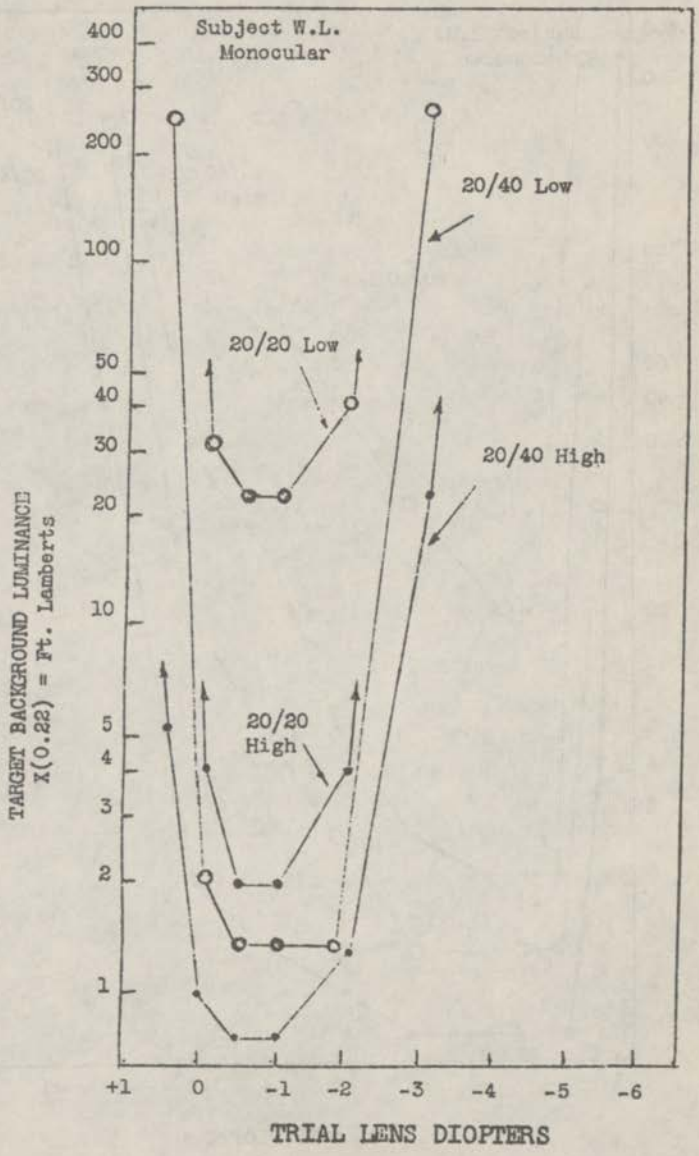

Subject W.L.
Monocular
20/40 Low
20/20 Low
20/40 High
20/20
High
400
300
200
100
50
40
30
20
10
5
4
3
2
1
+1
0
-1
-2
-3
-4
-5
-6
TARGET BACKGROUND LUMINANCE
X(0.22) = Ft. Lamberts
TRIAL LENS DIOPTERS

FIGURE 3

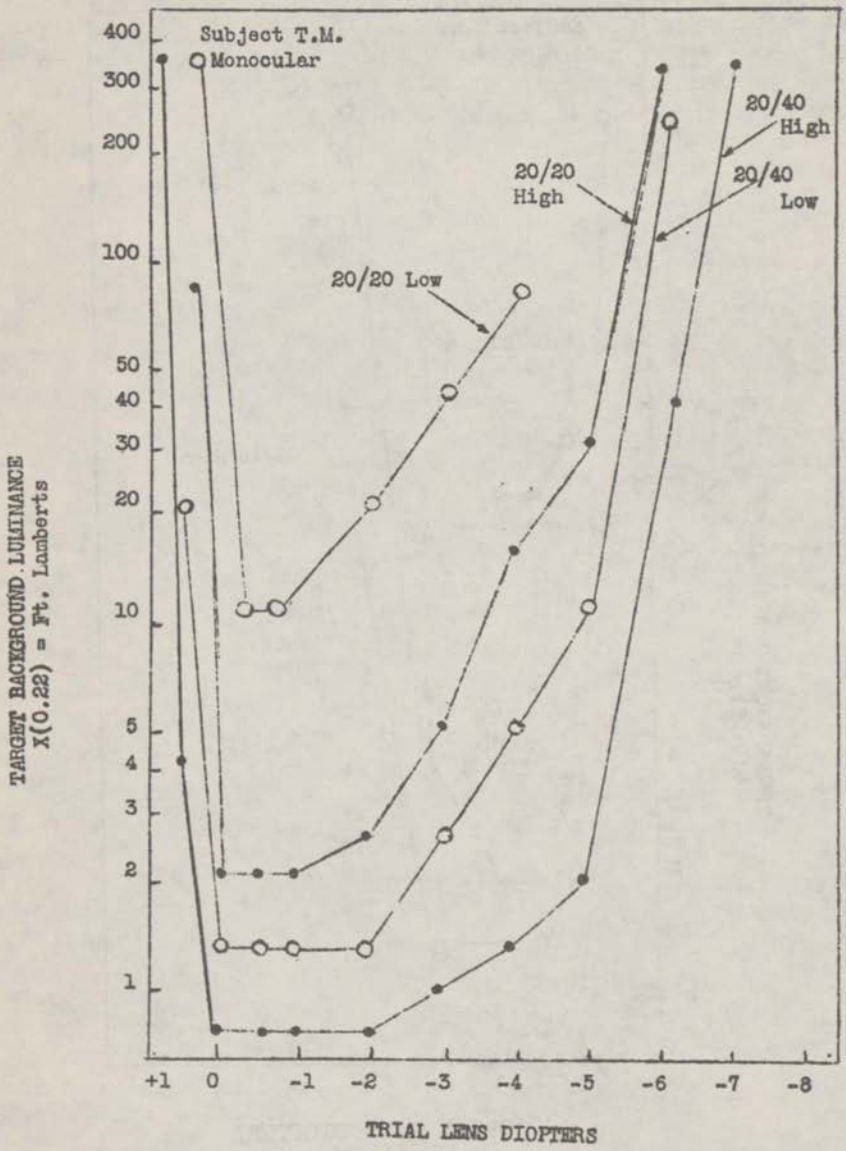

Subject T.M.
Monocular
20/40
High
20/20
High
20/40
Low
20/20 Low
400
300
200
100
50
40
30
20
10
5
4
3
2
1
+1
0
-1
-2
-3
-4
-5
-6
-7
-8
TARGET BACKGROUND LUMINANCE
X(0.22) = Ft. Lamberts
TRIAL LENS DIOPTERS

FIGURE 4

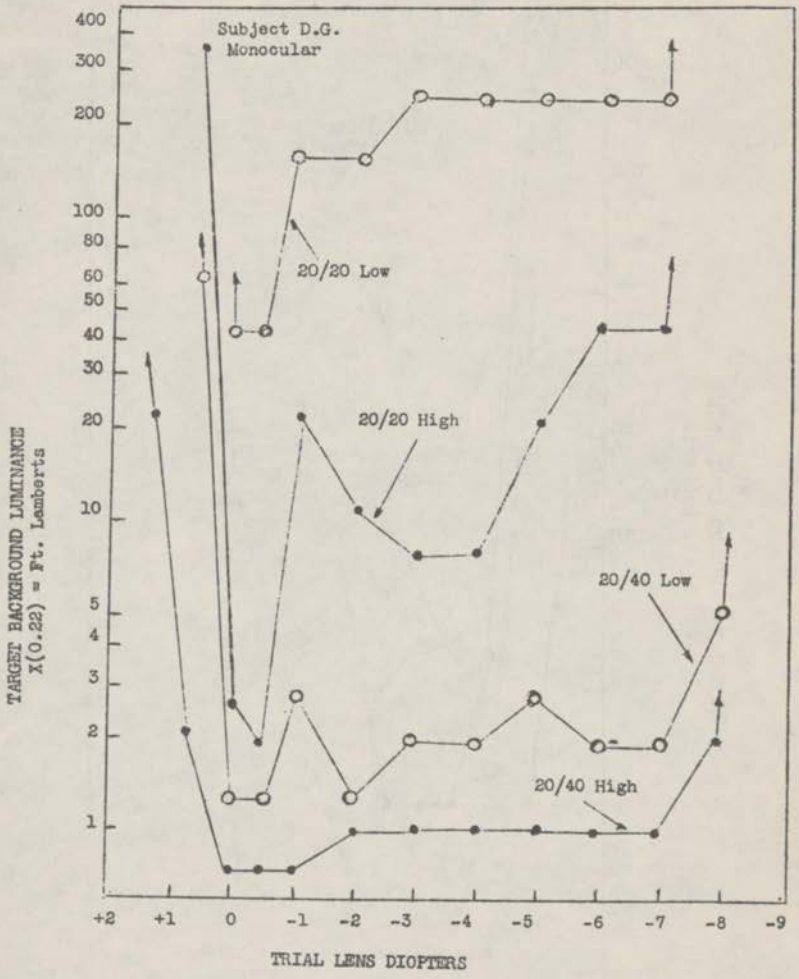

Subject D.G.
Monocular
20/20 Low
20/20 High
20/40 Low
20/40 High
TARGET BACKGROUND LUMINANCE
X(0.22) = Ft. Lamberts
400
300
200
100
80
60
50
40
30
20
10
5
4
3
2
1
+2
+1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
TRIAL LENS DIOPTERS

FIGURE 5

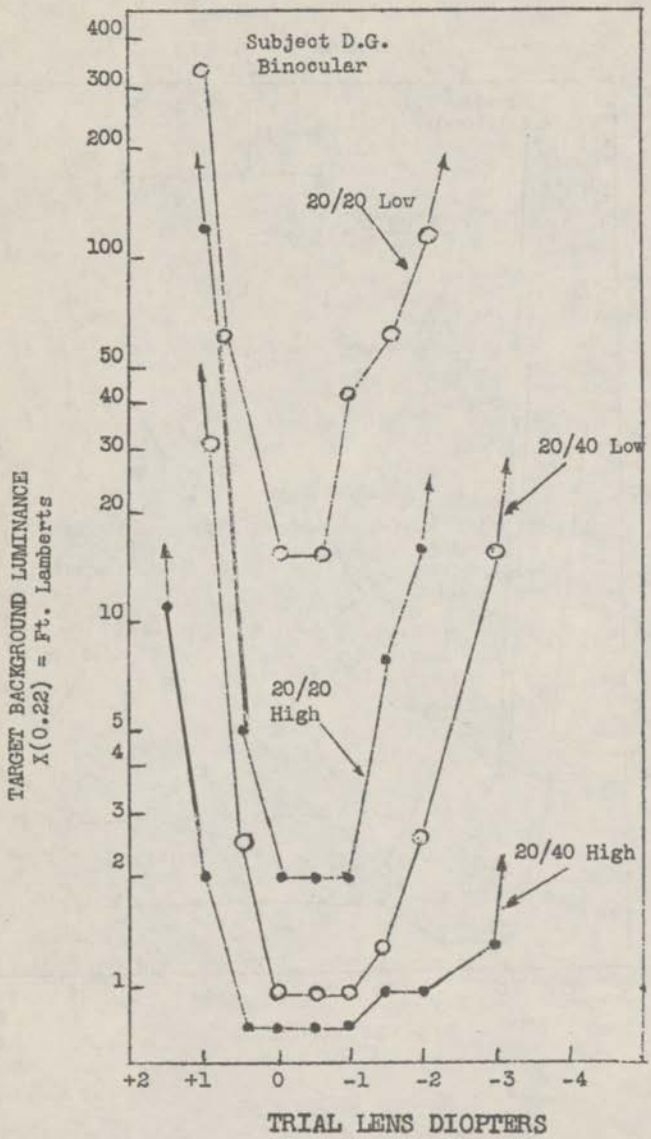

Subject D.G.
Binocular
20/20 Low
20/40 Low
20/20
High
20/40 High
400
300
200
100
50
40
30
20
10
5
4
3
2
1
+2
+1
0
-1
-2
-3
-4
TARGET BACKGROUND LUMINANCE
X(0.22) = Ft. Lamberts
TRIAL LENS DIOPTERS

FIGURE 6

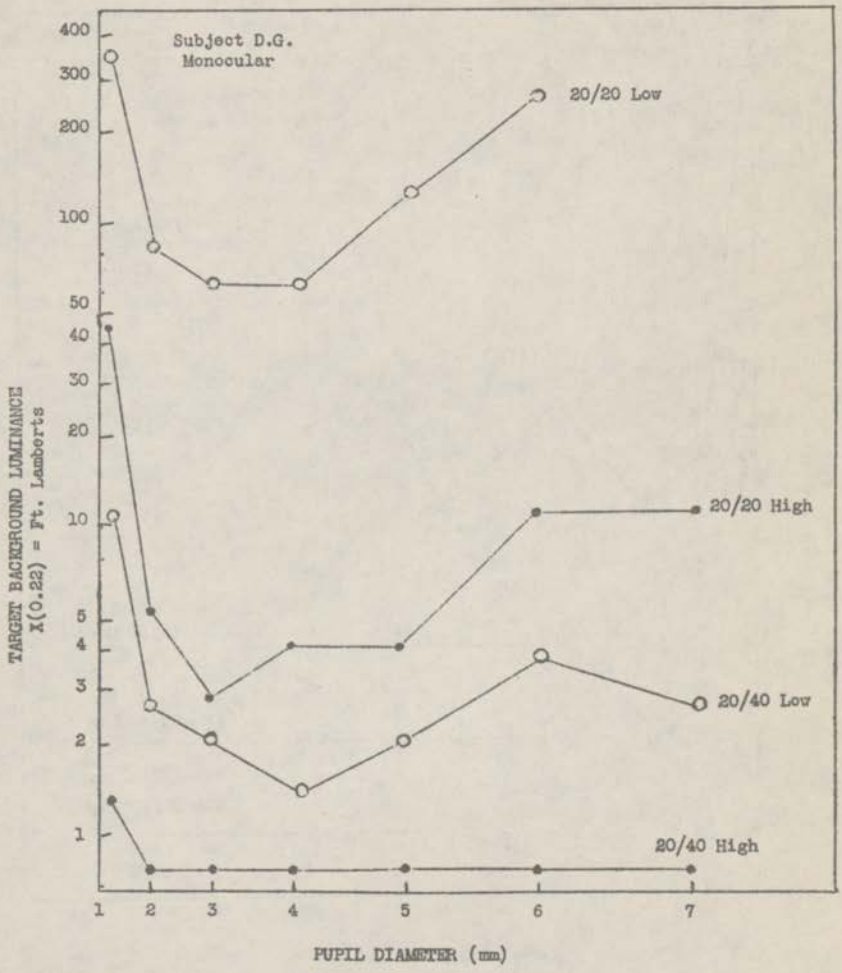

Subject D.G.
Monocular
20/20 Low
20/20 High
20/40 Low
20/40 High
TARGET BACKGROUND LUMINANCE
X(0.22) = Ft. Lamberts
400
300
200
100
50
40
30
20
10
5
4
3
2
1
1
2
3
4
5
6
7
PUPIL DIAMETER (mm)

FIGURE 7

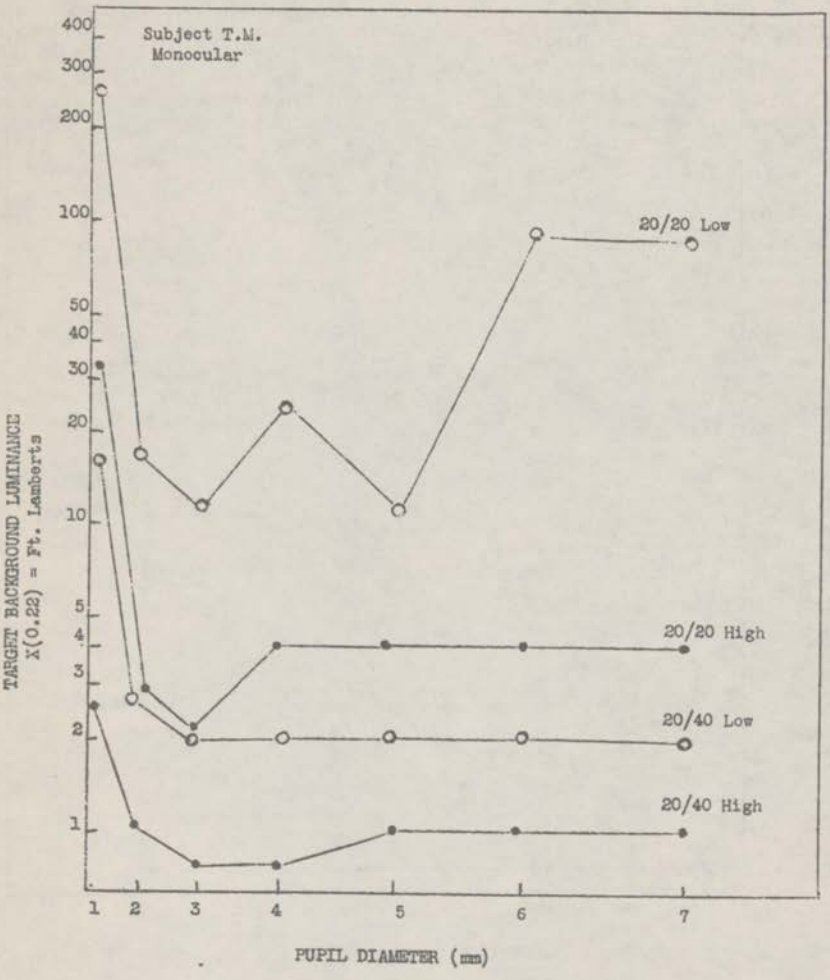

Subject T.M.
Monocular
20/20 Low
20/20 High
20/40 Low
20/40 High
TARGET BACKGROUND LUMINANCE
X(0.22) = Ft. Lamberts
PUPIL DIAMETER (mm)
400
300
200
100
50
40
30
20
10
5
4
3
2
1
1
2
3
4
5
6
7

FIGURE 8

Examiner_____ Date_____

AMERICAN OPTOMETRIC FOUNDATION NIGHT DRIVING APTITUDE QUESTIONNAIRE, FORM 11–12–62

Name _____ Age _____ Questionnaire score _____

N.V.P.T. Scores: 20/40 a) ____ ft L.; 20/40 b) ____ ft. L.; 20/20 a) ____ ft. L.; 20/20 b) ____ ft. L.

Encircle patients answers. Add numbers in parentheses to obtain his questionnaire score.

1. What part of your driving is at night? (1) None; (2) ¼; (3) ½ or more.
2. Do you find it more difficult to drive at night? (1) Yes; (2) Same; (3) No.
3. Do you prefer driving on lighted or on unlighted highways? (1) Lighted; (2) Either; (3) Unlighted.
4. Is your night driving ability as good now as it was 10 years ago? (1) No; (2) Same; (3) Better.
5. Do you think your car needs brighter headlights? (1) Yes; (2) Don't know; (3) No.
6. Which time of day is the most difficult for you to drive? (1) Night; (2) Twilight; (3) Same.
7. Do you avoid night driving because of your eyes? (1) Yes; (2) Sometimes; (3) No.
8. Do you prefer that someone else drive for you at night? (1) Yes; (2) Sometimes; (3) No.
9. Do you like more light for reading than you did when you were younger? (1) Yes; (2) No.
10. Do you have difficulty walking outdoors at night? (1) Yes; (2) Sometimes; (3) No.
11. Do you think you are a safe night-time driver? (1) No; (2) Average; (3) Yes.
12. Would you be afraid to ride with a driver who sees no better than you do now? (1) Yes; (2) Perhaps; (3) No.
13. Do you see streaks or rings around lights at night? (1) Yes; (2) Sometimes; (3) No.
14. Do you see double at night? (1) Frequently; (2) Sometimes; (3) Never.
15. Do you mostly drive near the center white line? (1) Yes; (2) No.
16. Do you slow down because of the glare from oncoming headlights? (1) Usually; (2) Sometimes; (3) Never.
17. Do distant objects seem blurred at night? (1) Yes; (2) Sometimes; (3) No.
18. In equal traffic conditions which is most tiring? (1) Night driving; (2) Day driving.
19. Do red taillights dazzle you at night? (1) Yes; (2) Sometimes; (3) No.
20. About how many miles do you drive in a year? (1) Less than 8,000; (2) 8,000–15,000; (3) 15,000 or more.

Editorial Comment

By Irving Bennett, O.D., Editor
1316 Sixth Ave., Beaver Falls, Pa.

EARLY IN 1957 the AOA through its Motorists' Vision and Highway Safety Committee and its Woman's Auxiliary launched an ambitious nationwide survey of driver's vision, a survey that had as its final objective 100,000 completed vision and driving records.

A series of special forms, adapted to standard available visual screening devices, were designed for use in the survey and a uniform test procedure was adopted. Resultant data were to be analyzed and interpreted via electronic computers at the Division of Optometry, Indiana University.

Enthusiasm for the voluntary vision screening survey was immediate. Portable screening equipment was set up in scores of communities in twenty-five states.

Drivers were invited to have their vision tested by standard techniques, without charge or obligation. The tests were administered by laymen, but supervised by licensed vision specialists. Almost all non-technical details were handled by women's organizations—members of the Women's Auxiliary of the American Optometric Association, National Home Demonstration Council, and the Women's Division of the Automotive Safety Foundation. Both men and women drivers were tested, and in about the same proportions as licenses are held by male and female drivers.

A pilot study, encompassing 3000 licensed drivers, accounted for some interesting statistics. Percentages of drivers found to fall below acceptable standards on the major visual requirements tested included: inadequate depth perception, 22%; inadequate acuity, 21%; lateral phorias, 17%; vertical phorias, 13%; and inadequate field of vision, 10%.

A great many conclusions could easily be drawn from the pilot survey. But the 3000 sample was really not enough and the broader study was initiated.

In order to achieve the goal, each state was assigned a quota . . . a quota determined by the number of AOA members in the state multiplied by 10.

To date, after five years of effort, we report disappointingly that less than 10,000 survey forms have been completed and returned. And these 10,000 forms emanate from but 13 states and the District of Columbia, the latter being the only one to exceed its assigned quota. Interest runs high in the District: thanks to the Society, its Auxiliary and the Woman's League for Traffic Safety, there are several additional forms ready for transmittal, enough to place the District in a position double its quota!

The research value of the national survey of driver's vision is unquestioned. An article in this *Journal* points out conclusively that insufficient research has been performed to establish licensing standards. The AOA survey can be relied upon for precise information that will lead to additional research and the establishment of proper standards.

The public relations value of the survey is tremendous. Concern for the wholesale slaughter on the highways has caused national, state and local leaders to explore every avenue to improve highway safety. If inadequate vision is, or is not, determined as a decisive factor, the public service of the survey study will most assuredly result in excellent relations for the profession.

The *Journal* is constantly in receipt of news stories of vision screening programs conducted by local societies at state fairs, in eye mobiles, at public gatherings. How

easy it would be to transform these screening programs into the nationwide survey by using the prescribed forms and getting some additional information! The data would be invaluable; the increased effort would be small.

In addition to optometric groups, there are many individuals, committees and organizations seeking action programs for traffic safety. These may well direct their activities toward "vision for driving" goals and join in with the nationwide survey.

Your encouragement would help indeed.

Self-Employed Pension Programs

A joint communication from the AOA Departments of Legal Affairs and National Affairs to all state associations deserves repeating here.

Although the President signed H.R.10 (now Public Law 87-792), the Internal Revenue Service has not yet even indicated when it would promulgate the regulations for its administration. Nevertheless, numerous plans for the self-employed both acting as individuals and through their organizations such as AOA are being offered by various sources.

The Board of Trustees at its meeting in St. Louis on November 4, 1962 appointed a special committee to consider any plans that might be submitted to it but determined to take no action prior to the issuance of the regulations by the I.R.S.

Individuals who desire to avail themselves of the provision of this new law have all of the calendar year 1963 to decide upon what plan they will adopt and to make their initial payments. There is no need for haste.

It is recommended, therefore, that affiliated organizations and individual members wait for AOA information bulletins which will be issued from time to time. Do not be stampeded or high pressured into taking any action at this time.

Unified Health-Welfare Department?

Generally speaking, the profession of optometry is held in high regard by individual state departments of welfare, and optometric cooperation with these departments has always been on a high and respected level. Unfortunately the same is not the case in state departments of health where control is exercised by members of the medical profession, who, in many instances, fail to recognize or utilize optometric services even when those services would be beneficial to the public.

We are, it appears, at the dawn of a period of rapprochment and cooperation between health and welfare. There are already several notable examples of consolidated or joint activity. Optometrists must look forward to the day not too far in the offing when departments of welfare and departments of health work together under one superstructure.

Leona Baumgartner, Commissioner of Health for the City of New York, in a recent presentation before the American Public Welfare Association analyzed the trends in the direction of consolidation. Joint health and welfare departments already exist in Maine, Missouri, Puerto Rico, Alaska and New Hampshire, noted Dr. Baumgartner, and Maryland, the District of Columbia and Kentucky have health department administered programs of medical care for welfare recipients. Says the Commissioner: "With the exception of Maryland, none of these health department administrated programs has reached the state of comprehensiveness that is desired in good medical care program . . . in New York City, we have achieved comprehensiveness".

With the aging of our population, with the decline of infectious disease and marked increase in chronic illness, with health care costs rising at a rapid rate, look for moves on a state governmental level to increase public health and welfare services and, at the same time, endeavor to improve operational efficiency. An attempt to unify welfare and health departments will be a national trend.

It behooves all optometrists to work for improved services to the needy public, to sanction and assist in attaining governmental efficiency at the lowest cost but, at the same time, protect the public's right to a free choice of practitioner. ■ ■ ■

Survey of research pertaining to motorists' vision

SIDNEY A. MINTZ, O.D.

THE PEOPLE OF THE United States have been subjected to years of commercial advertising on the ease of driving automobiles and, unfortunately, the speed with which they can be driven. Horsepower ratings of automobile engines have been constantly increased for "get-away" and passing power. Sped and facility of driving have been watchwords in the advertising.

Shift in Responsibility

It becomes the task of safety experts, editorial writers, motor vehicle inspectors and an army of police to make drivers cognizant of their responsibilities. In a constantly maintained program of education, engineering, enforcement and re-examination, the responsibility for safe driving is shifted somewhat from officials of the State to the drivers themselves. Driver responsibility would also tend to emphasize the realization that driving ability is not something which comes spontaneously with the acquisition of a small printed card. It is something that must be developed through training and experience. Roads are being re-designed and improved, thus leading to new situations. Old roads, even though familiar to the driver, present a hazard with the increase in the number of cars. Constantly changing environments would lead us to re-examine periodically, our abilities to cope with ever-changing situations.

*Member, AOA Committee on Motorists' Vision and Highway Safety; chairman, NJOA Motorists' Vision Committee; member, President Kennedy's Traffic Safety Committee; chairman, Paterson Traffic and Safety Commission.

The average driver feels that he is a safe, efficient driver. He feels that he cannot be in an accident or cause one. He desires that safety measures be instituted for others, those who are not as safe and competent at driving as he is. This is a consistent premise that all safety experts must accept in their thinking and planning. This paper is concerned with the vision requirements for the operation of motor vehicles. It concerns the driver from the applicant for a learner's permit to the experienced driver.

Lack of Research for "Standards"

Surveys have demonstrated that the majority of accidents occur with experienced drivers. Minnesota found that 61% of drivers involved in accidents had been driving more than 10 years. Oklahoma found 45% of drivers in accidents had 11 years or more of driving experience. This could lead to the conclusion that re-examination may be needed at some point after the initial license is granted.

Vision is a prime necessity to a driver. The efficiency of vision changes with age both from a functional and a pathological standpoint. No other function is so important to a driver as his vision. Yet, this sense is completely neglected after a cursory screening of drivers for visual acuity at the time of the initial application for licensure. For many years the literature, state laws, and speakers at various safety conferences have referred to "acceptable" minimum vision standards for the operator of a motor vehicle. These "standards" are more or less

acceptable and are in use by state motor vehicle departments. After going through thousands of pages of literature, we find very little actual basic research to prove or substantiate the basis for any of the accepted vision standards.

No research in depth has ever been done on visual acuity in relation to safe driving or driving ability. The Supreme Court of the State of Iowa recently held that the state's minimum vision standard of 20/30 is reasonable. After his usual examination, the eye practitioner can generally predict the individual's vision ability for driving. In the absence of responsible research, this is the most reliable criterion available.

It must be noted that experience has demonstrated that drivers who have visual or physical impairments of long standing are usually safe drivers, because they have learned to compensate for their deficiencies. It cannot be said, however, that these drivers operate under the same conditions as those who function without handicaps. They usually choose the time, place and conditions under which they will drive.

Minor Deficiency to Major Proportion

In California, a check of the visual acuity of drivers in a 20-29 age group (58 in number), who were involved in fatal accidents, demonstrated that 72.4% had 20/20 visual acuity or better and that only 12% had major defects of vision.[1] The significance of the superiority of good vision compared to poor vision in fatal accident cases is not high, as a critical ratio of 2.1 indicates. A critical ratio of 0.8 definitely shows that the difference in visual acuity between habitual violators (the vast majority of whom have average visual acuity) and the fatal accident drivers is not due to major differences in visual acuity but rather to minor differences.[1] This may lead to the conclusion that a person becomes aware of major deficiencies more readily than minor ones, and thus is more likely to endeavor to compensate for the major ones.[2] It must be considered that fatigue and other factors may temporarily enlarge a minor deficiency to major proportions. This may occur in hyperopia, astigmatism, high heterophoria or vertical imbalance of the extra-ocular muscles.

Low visual acuity is significantly more prevalent among drivers involved in intersection accidents (63.2%), while those involved in non-intersection accidents (90%), possess average visual acuity. It was noted in the California survey that habitual violators compared favorably in visual acuity with the intersection accident cases.[3] It was noted in this same survey that 90.9% of intersection accidents happened at the side of the deficient eye. It was concluded that defective visual acuity apparently is a potent factor in intersection accidents.

It was noted, too, that poor visual acuity, especially in one eye, was significant in rear-end accidents and, again, in accidents where violators attempted improper passing and had allowed insufficient clearance in passing.[3] Tiffin, of Purdue University, reported that the percentage of drivers in need of eye care varies with age (20-30 years old: 15%; 50 years and over: 40%). A Better Vision Institute survey disclosed the following percentages of need for eye care for the ages indicated: at age 20, 23%; at age 30, 39%; at age 40, 48%; at age 50, 71%; at age 60, 82%; and at age 70, 95%.

The "act of driving" is not merely the operation of a motor vehicle, or the carrying out of motor vehicle operation under a given set of conditions. The term is all-inclusive, covering the driving of a variety of motor vehicles, ranging from a simple motor scooter or go-cart to a 30-ton truck and trailer. The "act of seeing" has many facets, too. It is more than visual acuity, even more than the sum total of the determination of visual acuity, lateral and vertical muscle balances, fusion, depth perception, and color vision. We do not know all the relationships of the various visual skills to driving, even if we consider only daylight driving.

Motor vehicle bureaus should set up adequate vision standards. These standards may be too lenient for many drivers and too harsh for others. At the same time, they should maintain high standards rather than turn to a complex series of standards to cover every type of driving.

It is incumbent upon motor vehicle officials to set up and maintain adequate standards which will stimulate improvement of visual efficiency rather than cause large scale rejection of applicants. Civil service commissions, insurance companies, trucking companies, large corporations require certain driver groups to demonstrate better visual efficiency than that required for a regular license in all states. Management knows that a visually efficient driver is a safe driver. Yet, little or no scientific research has been done to prove this point.

The eye practitioner, by training and experience, knows that certain symptoms, signs, and reactions are manifest with certain given ocular and visual anomalies. Hyperopia, myopia, and astigmatism are ocular anomalies, wherein the axial length of the eyeball or the curves of the various refractive media vary from normal and produce an out-of-focus image of the retina. A functional vision anomaly may be considered occuring from the retina to the perceptual center of the occipital area of the brain, i.e. the sensory level of vision.

This paper will attempt to review and interpret the research and expert opinion available on the subject of motorists' vision. Familiar to all is visual acuity.

Visual Acuity and Driving

Four states require a minimum visual acuity of 20/20 for chauffeur's license. Thirty-three states require a 20/40 minimum visual acuity.[3] Visual acuity is a measurement which signifies the keenness with which the retinal images are perceived.[4] Visual acuity is usually rated by the use of geometric forms, numbers or letters which subtend a 5' angle of an arc at 20 feet (Snellen). Most researchers consistently mention that if it were up to them to set a drivers' standard, it would be 20/20 visual acuity.

Hofstetter and Zerbe[5] did a follow-up on the survey performed by Hofstetter and Bryan[6] on the prevalent and potential visual acuity of automobile drivers. They found a close similarity in the percentage of persons who could achieve 20/20 visual acuity or better if corrected. They concluded that 94% of all drivers could have 20/20 visual acuity, or more, in the better eye if corrected properly. Their findings indicate that 20% of the records examined showed drivers to have had substandard vision until corrected.

It is significant to consider that persons in older age brackets have a rapid diminution in keenness of vision. These individuals limit their driving or stop driving voluntarily in many cases. This has been proven in Pennsylvania where 3,035 drivers, of the 394,910 re-examined so far, have voluntarily relinquished their licenses by not completing the required physical and vision examination required by Section 608G of the Motor Vehicle Code of Pennsylvania.[28]

Only 2% of those in the older age brackets in Pennsylvania *who were checked* could not achieve 20/30 or better visual acuity. It should be mandatory, therefore, that the best visual acuity possible be enforced as a driving prerequisite. This may prove a hardship on some, but proper glasses will serve the driver for many uses other than driving a motor vehicle.

There has been much research done by the American Optical Company and by the Bausch and Lomb Optical Co. through Purdue University to evaluate industrial safety programs. It has been found that there is a general increase in efficiency, less lost time, less breakage, less waste, improvement in morale and, of course, fewer injuries in plants with industrial vision safety programs. We may transfer these results to the driver and similarly raise his driving efficiency. In a survey[5,6] by Hofstetter, et. al., on the best visual acuity, we note that only 2% could not achieve at least 20/30 visual acuity in the better eye. Only 0.6% could not achieve at least 20/40 visual acuity standard recommended by most groups throughout the country.

Effect of Illumination and Speed on V.A.

Considerable thought should be given to the issuance of limited licenses for persons who cannot meet the 20/30 visual acuity standard. While this license will limit the driver to daylight driving only, it will reduce complete rejections and may prove more ac-

ceptable to the public and legislators. Richards[7] finds that a driver with 20/40 static daytime visual acuity has only 20/80 visual acuity under night illumination. Some years ago, Luckiesh and Moss measured 150 people and found average, normal vision (20/20) at 10 foot–lamberts and a decrease in the average visual acuity to 20/55 after adaptation to 0.01 foot-lamberts. The person with the best vision at the lower level had only half of the acuity available to him at the higher level.

For a driver to experience the same acuity at the lower level of illumination, as at the higher level, symbols on road signs would need to be increased in size five-fold. Contrast would also have to be increased six to twenty times to make the same size sign legible at the lower brightness. This assumes, of course, sufficient time to see. In other words, for a given contrast there is a minimal size that can be seen. The average sign on our highways has lettering five inches high and is equivalent to 20/200 Snellen-sized letters.

Seeing is limited by speed. Unless a minimum of light is focused on the retina for a sufficient time there is no vision, and when the image moves faster than the eye can compensate, vision is impossible. For black and white seeing 1/30 second is said to be adequate, while 1/5 second is necessary for color seeing. Fast driving enhances peripheral blurring so that progressively smaller fields in front of the driver remain clear at greater distances.

Danielson[3] reports that greater comfort is experienced when one drives at rapid speeds where only the central field is seen clearly and the eyes are shielded from the blurring in the periphery. The loss of clues from the blurring at the side may lead to over-confidence and even greater speed. Roper found that distances of seeing decrease by 20 feet for each increase of 10 mph. Vibration above 205 cps causes vision to decrease. The loss of vision at high driving speed increases because of the greater vibration of the vehicle. At high speeds the estimation of movement and judgment of speed may be halved. The safe speed for a given driver is that for which the perceptual load is not too great for proper response. At night, this load is greater and speeds should be decreased proportionately. A driver with poor night vision may have to go so slowly as to be a hazard on the turnpikes or parkways where speeding is permitted.

The visual mechanism is controlled by the nervous system. Vision efficiency depends upon the response to changes from moment to moment in the amount and distribution of light entering the eye. At night the changes in illumination can occur faster than the eye can adjust to the changes. The resulting conflict in the seeing mechanism and the effort expended in trying to get a clear and sharp view, which cannot be obtained under these conditions, are a source of strain, frustration and fatigue in the driver. A sharp retinal image is perceived more quickly and is less disturbed by glare light. A properly placed quarter diopter cylinder for the correction of astigmatism has been reported to improve night acuity by 25%![7]

High acuity is unnecessary for daytime driving when the pupils are small. There are reports of accident-free driving with low acuity, even 20/400, with no great difficulty after the first five minutes of adjustment. At night this is no longer true; the weak ,blurred images do not have enough contrast for seeing and the driver may not see obstacles. Motorists with less than 20/20 daylight vision should drive more slowly at night than those with better vision, and the proportionate decrease in speed should be determined for a representative section of the driving public.

Aging Decreases Vision

Aging decreases vision along with the other changes of senescence. More light is necessary for seeing with smaller pupils, crystalline lens changes, etc. One study indicates that for equal seeing the light needs to be doubled for every 13 years of age.

Figure 1 summarizes other information showing how vision decreases with age. Acuity and contrast sensitivity decrease, and the decreases may result in lower levels of visual acuity than are legal for driving in

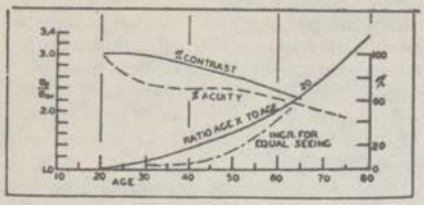


Fig. 1. Some age changes in human vision (Guth)

some states. This is another reason for a reconsideration of the importance of Snellen acuity as a criterion for a driving license.

Since the available illumination at night is scarcely adequate for the best eyes, many older people should drive less rapidly. Essential signs and signals should be much larger and brighter than those required for the best young eyes. Fortunately, older people generally become more conservative and drive more carefully.

The professional responsibility of the optometrist and the ophthalmologist is more important with the older patient who needs spectacles. In addition, advice should also be given to certain older people concerning the inadvisability of driving at night. Opacities forming in the eye may reduce vision to an unsafe level. Vision specialists have the problem of determining what is a safe level of visual acuity for driving and of advising traffic engineers and lawmakers so that highways can be made better and safer.

Accident-Proneness at Acuity Levels

Research at various institutes has shown us that a car traveling at 40 mph on a good road, with good tires and brakes, can stop safely at a distance of 143 feet. We can assume that a driver with 20/20 visual acuity can react easily in this situation, for he can see clearly at 280 feet, and have sufficient time for safe stopping.

If the driver has 20/40 visual acuity, his clear vision extends to only 113 feet. If he is traveling at 40 mph under favorable conditions, he may be 30 feet beyond a sign or object before he can stop.[26] Therefore, 20/30 visual acuity is a more desirable base than even the accepted 20/40 minimum.

With a 20/50 visual acuity minimum, the driver needs 90 feet to read a road sign. The implication of hazard is obvious.

Lauer's and Silver's studies both suggest a rapid transition to accident-proneness at acuity levels of above 20/40 visual acuity. A pilot survey of visual acuity by the National Home Demonstration Council in cooperation with the Women's Auxiliary to the American Optometric Association showed that 21.5% of 3,000 persons screened failed to achieve 20/40 visual acuity.[26]

Effect of Phorias

Little or no basic research has been accomplished on the relationship of a marked heterophoria to driving accident proneness. Again, we must rely on the empirical knowledge and experiences in daily practices.

A phoria is the measurement of the position the eyes tend to assume when fusion is absent. An exact phoria measurement is taken in an eye practitioner's office with prisms. In screening instruments two dissimilar targets, which cannot be fused, are employed to take a gross measure. An individual has a measureable phoria if he is able to fuse the retinal images of both eyes into one. If he cannot fuse because of a high phoria, he has a "tropia" or strabismus. There are many borderline cases where fusion is present occasionally, but the phoria is too high to permit constant fusion (intermittent tropia). This may result in a suppression or suspension of vision in one eye. Many times this is the cause of amblyopia.

Clues which stimulate the two eyes to produce single, binocular vision become fewer with deeper twilight and place more strain on the coordinating mechanism of the eyes. It is important to have the best possible correction for any phoria or muscular deficiencies of the motorist's eyes.[7] Shapiro and Mastache[8] say that if there is a phoria of an appreciable degree, or if a tropia is present, any extended period of driving at night results in blurring of vision, diplopia, impairment of depth perception, headaches, and resulting fatigue.

Refractive errors may be a cause of heterophoria. In fact, most tonic vergence

anomalies probably owe their inception to refractive conditions and to the excessive use, or non-use of accommodation.[9] The clinical symptoms due to heterophoria derive largely from the strain of the constant effort to maintain fusion, together with the confusion which arises owing to imperfect binocular fixation.[10] Heterophoria is considered to be a latent squint which is marked by reflex activity producing fusion. If fusion is lost or absent, the squint or strabismus will become permanent. There is no fundamental distinction between latent and manifest squint.[10]

High Uncorrected Phorais Lead to Fatigue

The general subjective symptoms associated with "eyestrain" due to the continuous effort expended to maintain fusion in all visual activities (including driving) are a feeling of tiredness and discomfort in the eyes, varying from a dull ache to actual pain; headaches of various types; and rapid fatigue and blurring of vision sometimes leading to actual confusion or temporary diplopia with giddiness and even nausea and digestive disturbances; torticollis (head tilting) which results from a vertical imbalance (hyperphoria). Most of these symptoms can be induced artificially by the wearing of prisms by a normal person.[9,10]

Judgment of direction also suffers in heterophoria.[10] The faculty of steropsis and the judgment of distances tend to be impaired. It is generally held that an exophore underestimates distances and an esophore overestimates.[27] This could explain some of the rear-end accidents that are so common on the road.

Corrective lenses and/or orthoptic training (vision training) to encourage habits of binocularity can compensate for, improve or correct a heterophoria. Thus, if the motor vehicle inspector finds a heterophoria, the applicant for a license should be referred in an effort to have this condition corrected. If the inspector or eye practitioner does not check or examine for this function, the driver of a car operates under a false sense of security.

What does a high, uncorrected heterophoria mean to the operator of a motor vehicle? The above mentioned subjective symptoms lead to fatigue and confusion. Fatigue brings on a dazed condition where diminished attention and speed of reaction (both sensory and motor) make the driver prone to accidents.

In a screening of 3,000 drivers, 16.9% failed minimum requirements for lateral phorias and 13% failed for vertical phorias.[26]

Effect of Fusion

Binocular fusion may be defined as the process by which the visual portion of the cerebral sensory area combines the sensory impulses initiated by the two somewhat disparate retinal images of an object of regard into a single perception, so that only one tri-dimensional object is seen.[9]

Obviously, fusion is a binocular function. One must have two impulses or messages going into the occipital cortex of the brain for a process of assimilation, integration and other reflex functions, with a resultant single picture to be perceived and interpreted. Fusion is absent when a driver possesses only one eye. It is also absent when a person suppresses or suspends vision in one eye.

The act of suspension of vision in one eye is quite common. It does not always occur, but may be found under conditions of stress. This is a protective mechanism of binocular situation under stress. The suspension may be in the area of the macula only, or it may be total. Suppression of vision in one eye can be found in tropias. Again, this is a protective mechanism of the brain to stop diplopia.

Even when two eyes are apparently straight but, for some reason which may be muscular or neurological, the eyes cannot coordinate or the brain cannot fuse the two images because of a gross dissimilarity, the impulse from one eye to the brain is cut off. If this situation is permitted to continue, nerve fibers from the macular area may atrophy, with a resultant amblyopia. Confusion and inefficiency in the visual process are due at times to a situation in which the basically dominant eye is more optically deficient than the other, thus making the second eye arti-

ficially dominant.[9] This is often correctible with glasses.

Clinically, fusion is classified in three grades: Grade I. Simultaneous Perception (superimposition); Grade II. True Fusion With Some Stereopsis; Grade III. True Fusion With Stereopsis.[10]

It is probable that very close to 100% of all drivers could achieve Grade III fusion, with the proper care of an eye practitioner if even some fusion is present. The visual process develops in the infant in the above successive levels. If the eye doctor finds an impairment of fusion, he traces it back to its developmental level and institutes training from that point.

Now, what does the fusion faculty have to do with the safe operation of a motor vehicle on our highways? It can be safely said that good fusion is the cumulative result of an efficient visual process. If fusion is impaired somewhere along the visual pathway, from the eyelids to the occipital area of the brain, something is wrong.

In the majority of people, faulty fusion can be improved. First and foremost, however, it must be found. Fusion ability can be discovered only by the professional practitioner who is examining for it. An impaired fusion faculty may be compared to a headache, because its presence may indicate a malfunction.

Effect of Color Vision

Most authorities state that the ability of the eyes to interpret color is dependent upon the possession of certain color receptors in the retina. In the absence of these color receptors, the individual is color blind.

Genetically, color sense has developed from black and white (and the various shades of gray in between) to blue and yellow perception and then to red and green perception. Light as we see and use it is made up of the various visible wave lengths of the spectrum. The various wave lengths can be separated and measured. The eye is most sensitive to the D line of sodium, a shade of yellow.

Lack of color perception must be considered from two aspects: 1) color blindness, where the retinal receptors are absent; and 2) color ignorance, where the individual has not learned to interpret or discriminate color.

About 4% of the male and 0.4% of the female population are congenitally color blind. Color blindness may be acquired through disease or injury to the retina. Partial color blindness can be caused by the excessive use of tobacco or alcohol.[11]

Many color blind people learn the normal colors of objects through experience and under circumstances with which they are familiar. A color blind or color deficient driver must know that he is color blind or deficient. The color deficient may be trained to distinguish color. The color blind cannot be so trained. Color blind patients who drive, know they are color blind and compensate accordingly. We might add that a few take their clues from other drivers, especially when uncertain about the color of traffic signals.

We believe motor vehicle inspectors should continue to check for color vision simply to inform the driver if color blindness exists but not deprive a license for this visual anomaly.

Stereopsis and Depth Perception

As noted above, stereopsis, the ability to see tridimensionally, is the highest development of the binocular organism. Monocular vision or substandard vision in one or both eyes is actually a "depth conception", whereas, good binocular vision is truly "depth perception with stereoscopic vision".[12]

A monocular individual, or one seeing with substandard vision, depends greatly on experience to determine distance and size. These experiences are: 1) Psychological (a. aerial perspective; b. distribution of light and shade; c. the overlapping of contours; d. geometric perspective; e. interpretation of size.) 2) Physical—parallax.

These experiences constitute a learned process of spatial localization. A monocular person actually sees his space world flat. His learning, almost from birth, to localize objects in space permits him to find these objects and to orientate to his space world.

Parallax is an optical phenomenon which makes a near body seem to move in a direction opposite to the motion of the eye, while a more remote object appears to move in the same direction; the relative degree of motion being conditioned by the space interval between the two objects. Therefore, when one moves one's head or eye slightly to the side, he is able to localize an object in space by the apparent movement of other objects both closer to (against motion) and further away (with motion) than the object of regard. When we adjust the muscles within and outside our eyes, we have a clue to depth through kinesthetic (muscle) sense.

Now, let us consider stereoscopic vision. This is achieved by the stimulation of disparate areas of the retina. In addition to this, we must also consider the separation of the two eyes which makes us see two images, one with each eye, but at a slightly different angle. Werth, Stralton, Jaensch, Langlands, et. al. have found that stereoscopic vision is a very fine and accurate function of the eyes.[12]

As noted before, lack of stereopsis does not preclude the absence of depth perception as we know it. Many drivers, who are monocular individuals under conditions of stress and fatigue, are accident free. It would give great assistance to the driver to be warned of an impaired judgment of distance. In discussions with patients found to have faulty stereoscopic vision, we find they argue when they are told to be careful while driving and allow sufficient room for safety between their car and the car in front of them. They say they have no difficulty. Again, it is experience and knowing limitations. No matter how vociferous the argument, these patients will generally allow more room between cars in the future.

Referral But Not Refusal

In a study on depth perception testing by motor vehicle inspectors, Ryan found that stereopsis was being measured. No minimum requirements were in use, so there were no license refusals but rather referrals to optometrists or ophthalmologists for further consultation.[13]

If depth perception is to be a salient factor in passing or rejecting an applicant for licensure, then depth perception tests, such as the Howard-Dolman test, must be employed rather than stereoscopic targets in screening instruments.

Depth perception tests of some sort must be used by motor vehicle inspectors. The records show many rear-end accidents. If the driver is warned about fair or poor depth perception, he could compensate by control of his speed and the interval between cars. If depth perception is poorly learned or developed, we believe the applicant should be rejected and referred to an optometrist or an ophthalmologist for vision training. Once it is learned, he may, upon re-application, be awarded a driver's license. In a screening program for depth perception, 22.3% failed the Howard-Dolman test.[26]

Effect of Visual Fields

The visual field is that portion of space in which objects are visible at the same moment during steady fixation of the gaze in one direction. The eye moves constantly, and with every eye movement, there is a change in the visual field. The effects of visual impressions last longer than an instant with a resultant larger field in normal use of the eyes.

We are mainly interested in the lateral or temporal field of a driver.[14] In a normal eye, one should be able to discern movement at 90° or more to the side. No large scale studies have been conducted on the problem of what the minimum angular visual field should be for drivers.

Hockenbeamer[15] states that the normal, stationary "side vision" of 180° or more, is reduced as follows when moving: 20 miles per hour, 104°; 30 mph, 96°; 40 mph, 70°; 60 mph, 42°. This is due to the blurring of stationary objects close to the side of the car which are not allowed enough time to create an impressionable, clear stimulus on the peripheral retina.

Danielson[17] states that the Harrington-Flock Method of screening for central visual field defects is more important than peripheral field defect detection because central

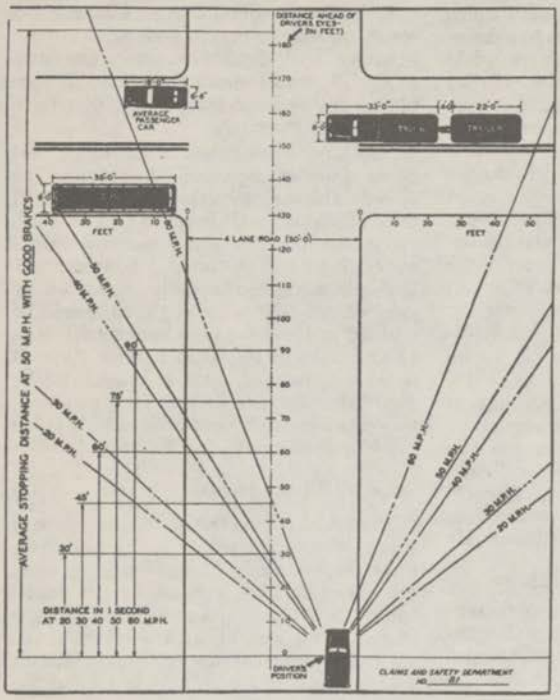


Fig. 2. Comparison of Figures For Stopping Distance (Kite)

vision may be absent and the driver may be unaware of this condition.

The visual field is limited normally by the anatomical structures that surround the eye. Thus, the deep-set eye will have a reduced field. And several pathological conditions reduce the field. It is important for the individual to know that he has a reduced field and there must be consultation to screen out active pathology that would reduce the field below requirements. We would favor a 70° lateral field in one eye and 140° total lateral field as a standard. The number of persons who would be referred to an eye practitioner by this standard would be very small.

The conclusion of Kites and King[18] is that while not enough research has been done on visual fields in relation to the driver, there is a relationship between speed and size of the visual field which the driver requires for safe driving. If a driver uses a "scanning" technique in driving, he can overcome a field defect, but this is rarely done by drivers.

A driver depends on a moving stimulus to attract his fixation with foveal vision so that the significance of detail may be assessed. If the area which receives this moving stimulus is blind, the driver misses it and is potentially in danger. In a peripheral field check where 70° and 140° were the minimums, 10% failed to qualify.[26]

Eye Fatigue Causes Hazard

Visual fatigue is closely related to psycho logic fatigue. When drivers are presented with a situation in which the eyes do not see well, as easily and comfortably as they should, they react to this situation by trying to improve seeing by making better adjust-

ments. The best adjustment is not always easy to find. There may be a conflict of reflexes with a consequent rapid shifting to overcome the difficulties.

If it is true that "eyestrain" is due to extra demands on the neuro-muscular adjustment mechanism, then it should follow that "eyestrain" increases when conditions for the use of the eyes are made worse. The eyes should, by more efficient adjustments, compensate to a measureable degree for these conditions. The result should be nearly equal work done but greatly increased fatigue. This was proven by Luckiesh and Moss.[19]

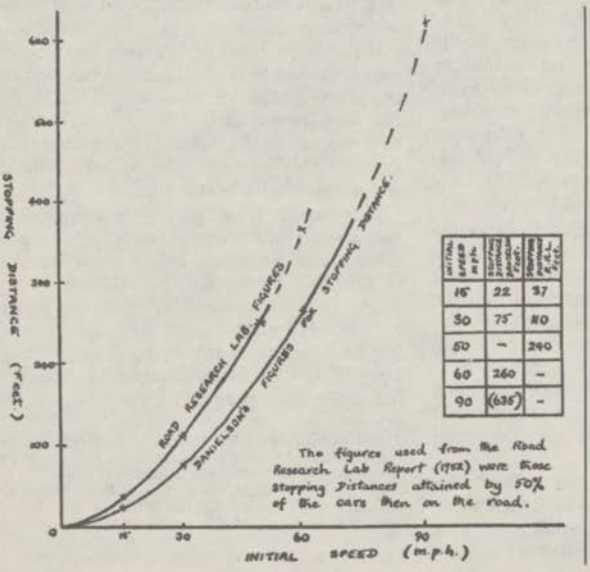
Under conditions of fatigue, reactions become more superficial. In a fatigued state experimenters have noticed momentary lapses scattered through the performance of uniform tasks.[20] Driving of a motor vehicle is considered a uniform task in which boredom and fatigue reduce overall efficiency.

Physical fatigue and ocular fatigue naturally would occur at the same time. At night under normal conditions with the approaching glare of oncoming headlights, there is a constant fluctuation in the size of the pupil to decrease or increase the amount of light entering the eye. The searching movement to compensate for varying light intensities and the adjustments of the pupil, increase fatigue.[21] If, in addition to this, an eye is already making compensations for a refractive error, muscular imbalance, or poor coordination, a definitely hazardous situation for the driver is the result.[27]

Research on Night Visibility

More research is being done presently, and has been done in the recent past, on night visibility than all other phases of motorists' vision put together. Outstanding is the work of Oscar Richards of the Biological Laboratories of American Optical Company and of Merrill Allen and Henry Hofstetter of the Indiana University Division of Optometry under a grant from the American Optometric Foundation. Allen and his colleagues are attempting to determine what visual functions are involved in night visibility while driving and to then devise an instrument to measure these functions.

More motor vehicle deaths and accidents



INITIAL SPEED m.p.h.	STOPPING DISTANCE (Feet)	STOPPING DISTANCE (Feet)
15	22	37
30	75	80
50	–	240
60	260	–
90	(635)	–

Fig. 3. Effect of Speed on Visual Field (Hockenbeamer, 1952)

occur at night. At dusk seeing becomes difficult. The sky is still quite bright while objects on the road seem to merge with their shadows and fade in the darkness. The overhead brightness veils the field of view with glare that prevents the retina from adapting enough to use efficiently the small amount of light reflected from the roadway. Parking, or low beam, lights aid in placing vehicles; high beams add to veiling glare and should not be used.

Clues to stimulate the two eyes into fused binocular vision become fewer with deeper twilight and more strain is placed on the muscular coordinating mechanism of the eyes. The glare and smaller number of visual clues handicap judgment of depth, position and speed of vehicles. At twilight, objects seem to be further away than their actual distance.[22] These conditions prevail with normal, average and abnormal eyes.

At night, there are many factors which may lead to frustration and confusion for the driver. They would be quite obvious during daylight driving because the field of view is not then limited by the range of the headlights and street lights, which at times, give improper clues. Extended driving at night tends to make a driver stare fixedly and thus can lead to fatigue and fascination. This can grossly impede a normal response. Under these conditions, response to a hazardous stimulus is slowed to a dangerous degree. The driver must "snap out" of this lethargic or hypnotic state to react quickly enough to avoid an accident.[17]

The rate of dark adaptation of the retina is dependent upon its level of dark adaptation at the beginning of the adaptation as well as the illumination concerned and the physiological state of the organism. Daytime exposures to intense sunlight slows the rate of dark adaptation. This is especially significant in summer for vacationers returning after long hours of exposure to daylight glare from the ocean or swimming pools and the sand.

Dark adaptation is reported to be slower at age ranges of 20-29 and 50-59, than at 30-50 and over 60.[23] Careful consideration must be given to the issuance of limited licenses to drive during daylight hours only because of the myriad of problems involved in night driving even under optimum conditions.

Summary

Very meager bona fide research has been done on the visual requirements for an operator of a motor vehicle. This sensory function is so interrelated with other senses and neural reflexes that it becomes a "complex complex" which is, often times, immeasureable in its totality.

We must rely upon our empirical and practical knowledge, plus a clinical sense, to derive minimum standards for licensure. To this, there should be added the vast experience of motor vehicle inspectors who screen many thousands of eyes and are able to develop an insight into the function of vision as it relates to driving.

It has been shown that it is necessary for many functions of vision, other than visual acuity, to be measured and evaluated by the professional eye practitioner to insure that a motorist is visually efficient for driving. The end result of visual inefficiency is fatigue and confusion which lead to lowered performance.

It has been demonstrated in scientific surveys that over 90% of all persons can be corrected to 20/20 visual acuity. This is the standard recommended by all researchers and experts in the field. The experience in Pennsylvania*, in periodic vision rechecks and physicals, is heartening.

It is further noted that with an increased minimum requirement in visual acuity and other visual functions, only a small fraction of licensed drivers will be rejected. Many who might be rejected under higher standards have already voluntarily stopped driving or limit their driving to daytime only. Upgrading of vision standards for motorists has as its basic purpose enhancement of the

*Data published by the Bureau of Highway Safety, Commonwealth of Pennsylvania, in its motor vehicle driver re-testing program reveal that of 875,396 re-examinations, there were 9,491 persons rejected for all causes. Of the 9,491 persons rejected, 284 were rejected because of 20/70 vision or less in the better eye. This represents 3% of the failures and .03% of the total number examined.

performance of the driver and does not seek to "lift" licenses.

A Gallup Poll report, published December 20, 1961, demonstrated that the public is ready to accept additional regulations which, authorities believe, could do much to reduce the tremendous number of casualties on our nation's highways. ■ ■ ■

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Anti-Laser Protective Safety Eyewear

Anti-laser safety eyewear is designed to protect the eyesight of researchers experimenting with lasers. The product is a combination of absorbing plastic and a dichroic mirror. It is said to have 97-db attenuation at a wavelength of 6943 A, and yet transmit enough visible light to allow the wearer more vision than a normal pair of sunglasses.

The laser filter plates give a wide unobstructed visual field, and the holder fits easily over regular glasses. Plates can be removed and replaced quickly through a side slot. Air circulation is provided by six-plastic-lated vents on the top, bottom, and sides of the holder. An air space between the two plates combined with the low thermal conductivity of the plastic prevents fogging.

A clear cover plate protects the laminated laser filter. Bausch & Lomb Inc., Rochester 2, N.Y. is the manufacturer. ■ ■ ■

Certain visual aspects of the average modern American automobile*

MERRILL J. ALLEN, O.D. PH.D.**

A STUDY OF CARS of four major American manufacturers was undertaken to learn the position of drivers' eyes in the vehicles and the location and size of visual obstructions present. The method is based on an analysis of photographs taken under typical highway conditions.

Determining Driver Position

A Polaroid Land Camera was mounted beside the highway and was used to photograph traffic entering a 40 mile per hour zone on Highway 37 on the outskirts of Bloomington, Indiana.

Profile photographs like Figure 1 were taken of 20 automobiles of four makes of the 1960, 1961, and 1962 models. On another occasion, regular highway traffic was sampled by photographing unsuspecting drivers in their automobiles from the research vehicle which overtook them from behind. Figure 2 is an example of the photographs obtained. Twenty-one automobiles representing the same four makes from 1960-62 were photographed in this way.

The photographs were analyzed with the aid of basic measurements obtained from local automobile dealers. Figure 3 shows a schematic automobile and the average values obtained from the 41 photographs.

From these data one may conclude that the average driver sits in the average automobile with his eyes 9½ inches above the horizontal plane passing through the top of the dash panel. His position places the point that is midway between his eyes ten inches away from the left window and at a distance of 36" behind the vertical frontal plane passing through the most anterior point of the windshield.

Interference by Corner Posts

With the average values of the driver position at hand a study was undertaken to determine the amount and kind of interference offered by corner posts and mirrors in the average automobile.

A camera support was built so that the camera could be correctly located in the

Fig. 1. Profile photographs were taken of 20 automobiles of four makes of the 1960, 1961 and 1962 models.

* Report of a study conducted under the American Optometric Foundation Motorists Night Vision Research Grant to Indiana University.

**Professor of Optometry, Indiana University

Fig. 2. Unsuspecting drivers in their automobiles were photographed from the research vehicle which overtook them.

average driver's eye position and multiple exposures were made as illustrated in figures 4, 5, 6, and 7. Twenty-two automobiles (six from the Ford Motor Co.; eight, General Motors; four, Chrysler Motors; and four, American Motors) were studied in this way. Included were compacts, standard and deluxe models. Table 1 summarizes the results obtained from measurements made on the photographs.

The results in Table I indicate a great similarity in the average angular size of corner posts and rear view mirrors among the four companies sampled. Of interest is the fact that American Motors products have the least obstruction (per cent of 180°) of all cars and show the smallest variability of measurements from model to model.

Another result, confirming the authors subjective impression, is that Chevrolet's left corner post is least displaced (17.3°) from the straight ahead position and constitutes a greater accident hazard than, for example, the American Motor car product where the corner post is 24.2° to the left of straight ahead. It would be quite easy while turning left to run down a pedestrian or to be in collision with another car that was approaching on a collision course from the left and for the driver not to see the hazard until too late due to the left corner post obstruction. The right corner post seems reasonable in size though not entirely free from hazard, particularly at high speeds with rapid approach of vehicles on collision courses.

In England[1] the Society for Motoring Manufacturers and Traders established that the corner post should not be nearer than 25° from the straight ahead position, and at 25° the maximum permissible obscuration is 4° (approximately) and this is increased by 1° for each 5° increase in the angular distance from straight ahead. No American automobile meets the S.M.M.T. values for the left front corner post.

At this point it is important to state that the values in Table 1 are based on a single eye, and measurements were taken at the average eye level intercept with the obstruction being measured. For example, the left corner post in figure 5 was measured on the level about 4/10 of the distance from the top to the bottom of this photograph. Since

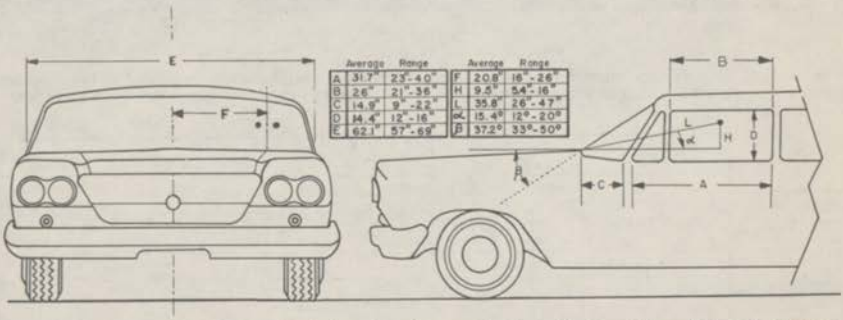

Fig. 3. Schematic automobile developed from the photographs taken of automobile profiles and driver position with the aid of basic measurements from local automobile dealers.

FIG. 4 FORD '62

FIG. 5 CHEVROLET '62

FIG. 6 RAMBLER '62

FIG. 7 PLYMOUTH '62

Figs. 4, 5, 6, 7. A camera support was built so that the camera could be correctly located in the average driver's eye position and multiple exposures were made. Twenty-two automobiles were studied this way.

	FORD		GENERAL MOTORS		CHRYSLER		AMERICAN		ALL BRANDS	
	SIZE	POSITION	SIZE	POSITION	SIZE	POSITION	SIZE	POSITION	SIZE	POSITION
Left Corner Post	$10.4^{\circ}\pm3.7^{\circ}$	$19.1^{\circ}\pm6.9^{\circ}$	$7.8^{\circ}\pm1.7^{\circ}$	$17.3^{\circ}\pm7.5^{\circ}$	$11.4^{\circ}\pm1.2^{\circ}$	$20^{\circ}\pm4.6^{\circ}$	$6.9^{\circ}\pm2.1^{\circ}$	$24.2^{\circ}\pm2.4^{\circ}$	$9.0^{\circ}\pm2.7^{\circ}$	$19.5^{\circ}\pm6.4^{\circ}$
Inside Mirror	$16.4^{\circ}\pm2.5^{\circ}$	$53.2^{\circ}\pm10.2^{\circ}$	$15.2^{\circ}\pm2.0^{\circ}$	$48.6^{\circ}\pm7.7^{\circ}$	$16.1^{\circ}\pm1.9^{\circ}$	$40.3^{\circ}\pm2.2^{\circ}$	$14.6^{\circ}\pm1.9^{\circ}$	$53.9^{\circ}\pm1.1^{\circ}$	$15.5^{\circ}\pm1.9^{\circ}$	$45.5^{\circ}\pm9.8^{\circ}$
Right Corner Post	$5.6^{\circ}\pm2.0^{\circ}$	$77.1^{\circ}\pm4.6^{\circ}$	$4.8^{\circ}\pm1.4^{\circ}$	$77.3^{\circ}\pm7.1^{\circ}$	$4.8^{\circ}\pm0.1^{\circ}$	$79.1^{\circ}\pm7.8^{\circ}$	$4.2^{\circ}\pm0.6^{\circ}$	$64.4^{\circ}\pm2.2^{\circ}$	$4.9^{\circ}\pm1.3^{\circ}$	$75.2^{\circ}\pm7.6^{\circ}$
Area of Inside Mirror	25.1 in.^{2} ± 6.7		22.9 in.^{2} ± 6.1		25.4 in.^{2} ± 7.4		21.6 in.^{2} ± 1.7		23.7 in.^{2} ± 5.7	
Total Obstruction By Corner Posts At Eye Level	9.7% ± 1.7%		8.5% ± 1.0%		9.0% ± 0.9%		7.9% ± 0.4%		8.9% ± 1.3%	

Table 1. Summary of data obtained from measurements on the photographs in Figs. 4, 5, 6 and 7.

no significant vision was felt possible through the left ventilator glass at this level in this car, the total angular obstruction includes the main curved body post and the vertical window guide.

None of the rear view mirrors posed a problem at average eye level as noted in the photographs. However, one cannot help but observe that tall drivers in many automobiles with mirrors attached above the windshield are completely obstructed from a view to the right by the mirror (Figure 2). Similarly short drivers find their vision is blocked by a dash mounted mirror.

Thicker Doors or Extended Arm Rests

One important conclusion from this study is that the average driver tends to sit very near to the left door, undoubtedly to use the conventional arm rest or to put his arm on the window ledge, and perhaps to steer more easily with his right hand.

This position appears to offer a hazard in three ways. First, it is apparent that the corner post obstruction of the field of view is sufficient to be dangerous and sitting to the left increases the danger from such obstruction. Second, the windshield distortions are increasingly serious as one moves his head laterally nearer the corner post. Finally, the driver is more subject to injury in sideswipe accidents if he is to the extreme left of the front seat.

A simple solution to this problem suggests itself. Manufacturers should provide a thicker door or an extended arm rest or both, so that the driver will be able to be comfortable and occupy a more central position in the cab which affords greater side vision and less windshield distortion. ■ ■ ■

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VISION AND LIGHTING: a German study

Lumeritas, in *Light and Lighting,* September, 1962, gives details of a new German study by a Dr. Bodmann of preferred illumination levels for a critical visual task that is similar in nature to reading.

The visual task set for subjects consisted of searching for very small numerals scattered over a sheet of paper, each with a hole beside it exposing a metal sheet under the paper. As the subject found the number he was instructed to seek, he touched the metal through the hole with a metal pencil, thus completing an electrical circuit. The time taken to complete the search provided an objective measure of visual performance. This test was carried out at a succession of different illumination levels up to 1,000 lm./sq. ft., and at each level the subject was asked for his impression of the lighting provided—whether it was "good", too dark, or too bright.

Subjects were divided into two age-groups —the under- and the over-50s. Performance standards for the two groups remained much the same when visual task conditions gave good contrast (*e.g.*, searching for black numerals scattered on white paper); but where contrast was poor (black numerals on dark grey paper), the younger subjects performed significantly better.

Individual subjects varied a good deal as to the level of illumination they found best; but the average tended to be around 150-200 lm./sq. ft. This is roughly the same level as that chosen by office worker subjects who took part in a British Lighting Council study not long ago.

Very high levels of illumination were unpopular not only, it was felt, because of discomfort from the light itself, but because of the heat radiated by the light sources used to produce very high-level illumination. ■ ■ ■

—*The Optician*

DAYTIME AUTOMOBILE WINDSHIELD and DASH PANEL CHARACTERISTICS

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That some automobile manufacturers have 50 years of experience is not immediately obvious when the present day production is checked for vision engineering. From the results of this and an earlier study (1) it almost appears that automobile manufacturers believe that vision has nothing to do with driving. Not a single automobile manufactured in America and neither of the two European products tested could provide a suitable visual environment for daytime driving. These are that the driver be able 1) to see through the windshield without reduction in contrast nor serious reduction in brightness; 2) to read the instrument panel with a minimum of time away from the highway, and 3) that the automobile be free of sources of glare in the field of view.

The results of this study indicate that another look at accident statistics is in order. Failure to see is not only possible but probable! The blame for the thousands of lives lost each year lies in part at least with the automobile manufacturers, for not a single visual handicap engineered into modern automobiles needs to be there. There are some good visual aspects to each manufacturer's products, but the faults in each are so serious as to make it seem that the good points must have been accidental. Indeed, the good features one year are often replaced in the next year's production by glaringly poor ones.

This study was conducted during the summer of 1962 on automobiles of all manufacturers for the years 1960, 61 and 62.** Fifty-six automobiles were photographed and measured for windshield transmission, amount of dirt on the windshield, instrument panel luminance levels and the vertical size of speedometer and odometer numerals. A Polaroid Land Camera was adapted to photograph the instrument panel from a distance of 1 meter, and a Spectra Brightness Spot Meter and a General Electric foot-candle meter were used for light measurements.

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** Special recognition is due Dr. James Wilhite, Jr., of Bedford, Indiana, who gathered the data for this report.

Table I lists the automobiles studied with the position of the sun being inferred from the time of day and the direction of the automobile. For reference, at 12:30 the sun was straight south and was 70° above the horizon.

Table II shows the results of measurements intended to establish an average scene reflectance value. Various earth surfaces were measured using the G.E. meter and neutral density wratten filters. The meter was held horizontally at waist height and aimed at the horizon over the road or field. A 10-inch black shield was placed above the meter to cut out the sky light. Readings obtained were multiplied by two as a rough correction for the loss of 1/2 of the meter's normal receptive field caused by the black shield held over the meter. To obtain the ambient (sun plus sky) luminance the meter was aimed at the zenith and the operator carefully avoided obstructing any of the sky light. The average figure of 11.7% reflectance obtained is, therefore, particularly significant for viewing horizontally along a highway and is the integration of high lights and shadows as encountered during the measurements. The reflectance of 11.7% will be used with the measured ambient illuminance to obtain a value for comparing with the stray light from the windshield, which results from dirt on the outside and inside of the windshield and from light reflected from the windshield surfaces. see Figure 1 on page 10.

In Table III, the car numbered in the first column, is completely described in Table I. The sky illuminance in column 2 is the amount

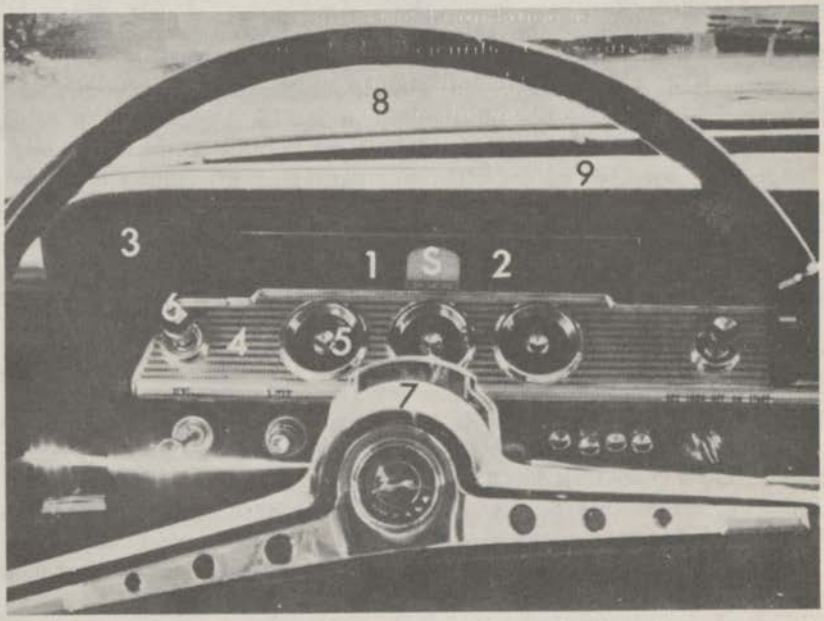

Figure 2, Car No. 5. S is the standard reflector. The ft. L. luminance levels at the numbers shown are: 1) 12; 2) 17; 3) 11; 4) 22; 5) 22; 6) 40; 7) 950; 8) 7500; 9) 2700. Note reflections in windshield. The "venetian blind" at the right is a grill on the top of the dash reflected in the windshield. Note glare from turn signal lever.

of light in foot-candles on a horizontal surface. The average scene value in column 3 is obtained by multiplying the sky luminance value by 11.7% obtained from Table II. The illumination on the dash, column 4, was obtained with the Spectra Brightness Spot Meter by measuring the light reflected from a small white reference plaque attached in the center of the speedometer on each instrument panel, and a suitable correction was made for the coefficient of reflection of the plaque. Columns 5, 6 and 7 show the Maximum, Minimum and Average Luminances of the Instruments and their immediate surroundings. These values are direct measures with the Spectra Brightness Spot Meter. Column 8, the Maximum Glare in the Field of View, was obtained with the Spectra Brightness Spot Meter aimed toward the glare source as the driver would see it. Column 9 gives the Eye to Panel Distance in centimeters with the seat position as found when the car was being measured. Columns 10 and 11 give the angular size of the vertical dimension of the speedometer and odometer numbers.

Column 12 gives the transmission of the clean windshield as measured by the Spectra Brightness Spot Meter. A white diffusing reference plaque was placed vertically on the car hood. The windshield was cleaned both on the inside and the outside, and black velveteen cloth was placed over the dash panel to eliminate windshield back surface reflections. The light reading through the cleaned windshield was then divided by the light reading taken outside the windshield, of the same plaque in the same position, to obtain the per cent of transmission.

Column 13 gives the values of light reflected toward the driver by the windshield from the top of the dash panel. This is a derived value and is the difference in windshield "transmission" with and without black velveteen over the top of the dash. Column 15 gives the values of light scattered from dirt on the outside of the windshield. These were obtained as the difference between the windshield "transmission" before and after cleaning on the outside. Column 17 gives the values of light scattered by dirt on the inside of the windshield. These values are the difference between the windshield "transmission" before and after cleaning on the inside. Columns 14, 16 and 18 are per cent values derived by comparing columns 13, 15 and 17 with the average scene luminances in column 3.

At the bottom of Table III is the average of the data of all automobiles tested. The average dash luminance of 72 ft. L. compared to the average scene luminance of 683 ft. L. viewed through the average windshield transmitting 86.4%. The luminance difference is about 8 to 1 which is comparable to the special aircraft dash luminance problem (5 to 1) studied by the author[2] using a reaction time measure of ability to recognize a test letter on the dash panel. Such brightness differences prohibit "instantaneous glance" perception and may require fixation for a second or more to see well enough to identify the task. Subsequent return of the attention to the road must result in temporary dazzling due to the heightened sensitivity of the eye needed to see the dash panel. The seriousness of the problem is substantiated by the fact that on the average dash the average speedometer dial luminance is

46 ft. L. (not shown in the tables), which gives an outside scene to dial luminance ratio of about 12 to 1. Several automobiles had ratios above 30 to 1. According to Duke Elder[4] " . . . the visual acuity improves slowly as the surrounding illumination is raised to just below the level of that of the test object: when it is raised beyond this point, there is a rapid fall in performance (Lythgoe)." The critical instrument panel details are the darkest areas on the dash in almost every case studied. The following is from the IES Handbook[5]: "Current good lighting practice has established that best results are obtained when brightness variation of adjacent areas, particularly within the working field, does not exceed 3 to 1, the work "(speedometer)" being brighter." (Not shown by this study, but very easily observed in certain automobiles, is the camouflaged nature of the speedometer pointer which is more difficult to see in the daytime than are the numbers on the dial). It is clear that brightness ratios are not ideal, in addition they are reversed from what is recommended. The average glare in the field of view of 20,047 ft. L. is explained by chromium horn rings and trim and by chrome plated windshield wiper arms, etc. So long as these are permitted near the driver's line of sight, certain sun positions are going to produce annoying and even incapacitating glare reflections.

The average distance of 72 cm. of the driver's eyes to the dash panel calculates to be 1.4 diopters which is the stimulus to accommodation provided by the numbers on the various dials. For presbyopes with bifocals, the dials are likely to be blurred with either portion of the glasses. For a presbyope with trifocals, this distance is within the range at which he should see clearly. For the younger emmetrope, accommodation time, in addition to adaptation time, is a factor in clearing the speedometer numerals. According to Borish[3] a 1.5D. blurred image will reduce Snellen visual acuity to 20/80 (when a target of 100% contrast is used, the surround luminance is nearly ideal and the patient is permitted time to adapt). The average speedometer number size is equivalent to about 20/300, but at the low levels of dash panel illumination in the daytime, the probability of being out of focus, and with the adverse effects of the ever present chromium glare sources, even these large speedometer numbers are too small for quick viewing. The odometer which has 20/80 sized numbers surely will require a much longer time to read than does the speedometer in most of the cars tested.

The average windshield transmission of 86.4% seems adequate in view of a 70% minimum industry standard. On the other hand, if we add to the unnecessary 15.5% average reflectance from the back of the windshield toward the eyes, the 3.5% and 1.3% average values of light scattered by the dirt on the windshield, we obtain 20.3% useless light scattered toward the driver's eyes. The average scene luminance of 683 ft. L. becomes 590 ft. L. when viewed through the 86.4% transmission windshield. The useless light (20.3% of 683) is 138 ft. L. This means that objects of 100% contrast can never be seen by the driver of the average automobile at more than about 81% contrast during the day time.

$$\frac{590}{590 + 138} = 0.81.$$

Special conditions such as dark objects on asphalt pavement or automobiles with excessive windshield reflectances, e.g., cars No. 5, 35, 43, 45 and 55 (and no doubt others at certain sun positions) will produce very low contrasts.

While dirt on the windshield is, on the average, unimportant, certain notable exceptions were found (see cars 35, 39 and 56). It is known that tobacco smoke is hygroscopic, and smoke residues on the inside of the windshield will probably cause greater light scattering, at high atmospheric humidities, than noted here.

The figures 2 through 6 show various manufacturers' concepts of a modern space age automobile's control panel! It is apparent that standardization of basic controls, instruments and locations would be helpful and would remove this most critical visual area from the hands of the car stylist and permit life saving basic improvements. The numbers in each photo indicate areas corresponding to the luminances given in the figure legends. Fourteen to 20 measurements were made on each automobile dash panel and the sites chosen were marked on a transparent overlay of a photograph of the dash panel. The camera distance was about 1 meter from the speedometer in each case. The object marked S is a standard reflector used with the Spectra Brightness Spot Meter to determine the illuminance falling on the instrument panel.

The photographs and brightness readings paint a clear picture. Figures 2 and 3 show cars number 5 and 34. While car No. 5 has nearly the lowest (12 ft. L.) instrument panel brightness of all tested, car No. 34 has nearly the highest. The author has driven a vehicle similar

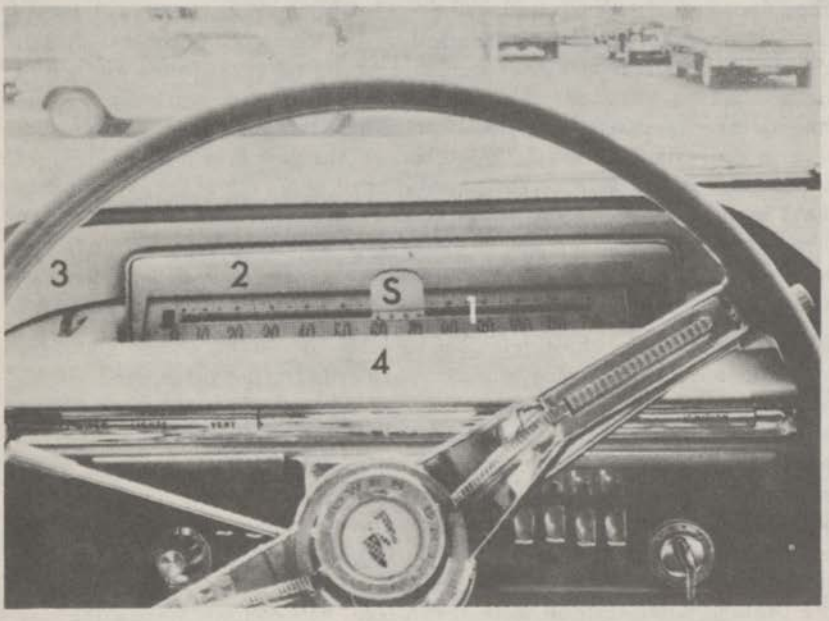

Figure 3, Car No. 34. S is the standard reflector. The ft. L. luminance levels are: 1) 125; 2) 135; 3) 230; 4) 1700. Note the need to search "in the dark" below area 4) for control levers and knobs.

to No. 5 on a trip and the frustratingly long time required to adapt to the dark speedometer area was still further extended by the need to search for the meter needle which was even less visible. Car No. 34 is much better in this respect, since the speedometer dial is at 125 ft. L., however the extensive dash area immediately below is 1700 ft. L., a luminance ratio of over 13 to 1! Since task and surround luminance ratios 3 to 1 or less are considered desirable and since 10 to 1 is considered as the upper limit, it is apparent that serious seeing problems are present in these two cars.

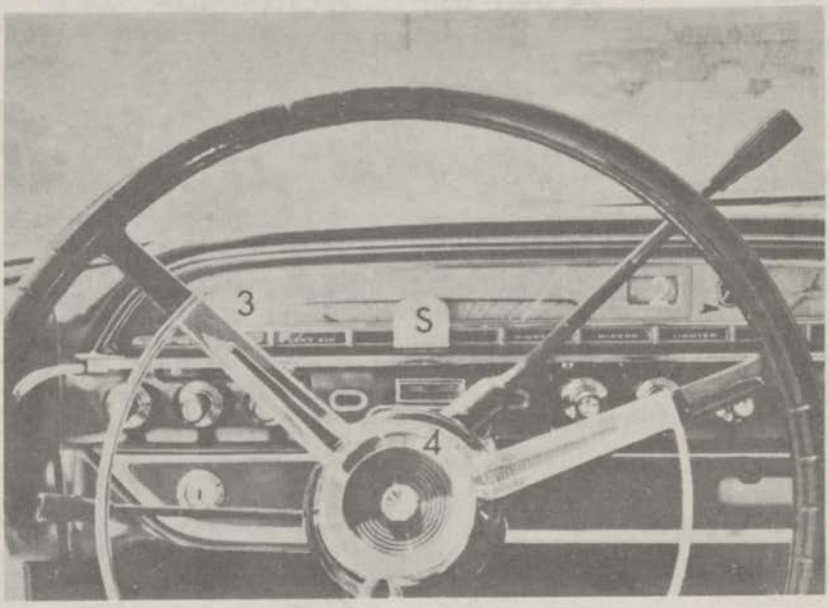

Figure 4, Car No. 15. S is the standard reflector. The ft. L. luminance levels are: 1) 100; 2) 90; 3) 410; 4) 1600. At 3 the glass reflection has blocked out the speedometer numbers. The numbers are of a particularly low contrast on this model.

Figures 4, 5 and 6 show some of the variations in panel design characteristic of the industry. Note the extreme range of glare intensities in figure 5 and the brighter, more uniform appearance of the dash in figure 6. Even in the figure 6 the surround (3) is brighter than the dial themselves!

(Information continued on page 8)

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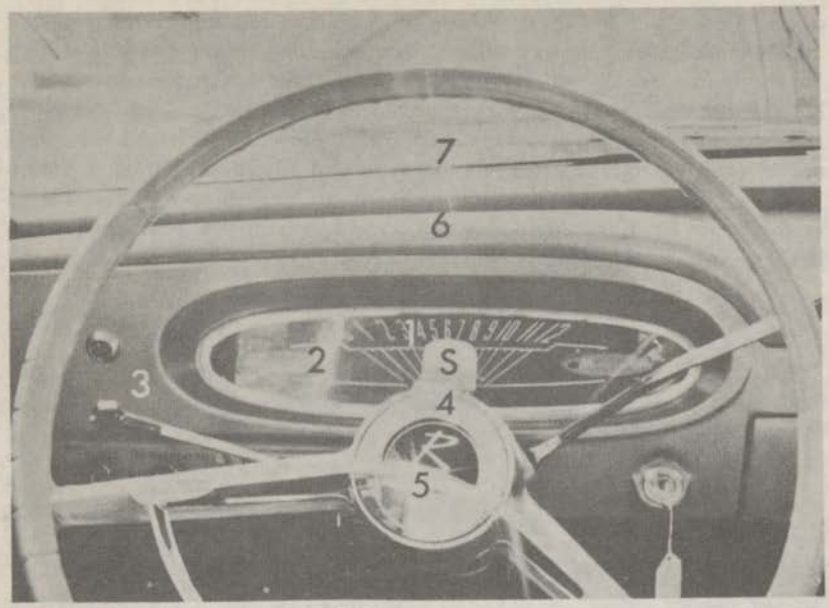

Figure 5; Car No. 41. S is the standard reflector. The ft. L. luminance levels are: 1) 35; 2) 120; 3) 52; 4) 1000; 5) 26,000; 6) 2,500; 7) 380,000. Note the veiling glare at 2 and the poor contrast of labels on control knobs at lower left.

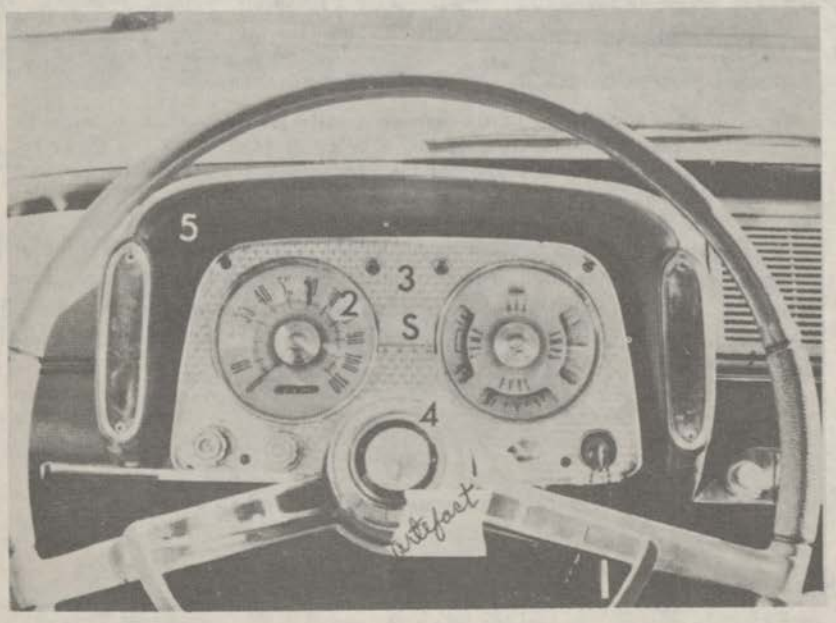

Figure 6, Car No. 40. S is the standard reflector. The ft. L. luminance levels are: 1) 100; 2) 150; 3) 175; 4) 7,200; 5) 38.

The photographs in figures 7 and 8 offer dramatic evidence of the windshield reflectances shown in Table III in the columns labeled dash reflection. Figure 7 shows a man standing on a tree-covered street. The photograph was taken with black velveteen lying on the dash top. Figure .8 shows the same scene without the velveteen light absorber. As a pedestrian in broad daylight, he wouldn't suspect that he was invisible to the driver.

Figure 7. With Black Cloth on Top of Dash.

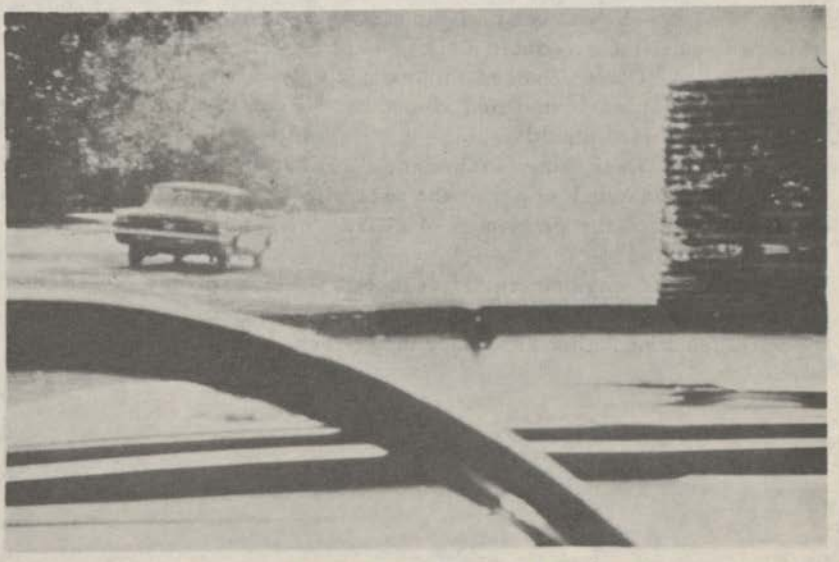

Figure 8. Without Black Cloth on Top of Dash.

Recommendations:

To achieve optimum visual performance at distance the automobile driver must be provided a daytime highway scene with the controllable items in the field of view adjusted to hold brightness levels equal to or lower than the average scene brightness but not lower than 1/10. Since the average scene was measured in this study to be 11.7% of the outside natural illumination, all objects receiving direct sunlight, e.g., the hood, the steering wheel, wiper blades, etc., should reflect not more than 10%. Corner posts and automotive interiors not receiving direct illumination should be of high reflectance values to keep away from excessively dark objects anywhere in the field of view. The surfaces reflecting in the windshield, however, must be as black and dull as possible to control veiling glare.

So that the driver may achieve optimum visual performance in reading the instruments of the dash panel, the instruments should be equal to or brighter than the immediate surrounding panel by an amount of up to 3 to 1 but not brighter than 10 to 1. Furthermore, to make it possible to adapt quickly from far seeing to dash panel seeing, illumination on the dash panel must be improved. A value to strive for is not less than 1/3 of the average outdoor scene brightness.

Summary and Conclusions:

A. This study on windshield and instrument panel characteristics has shown:

1. All of the fifty-six 1959-62 automobiles tested had serious faults so far as the visibility of the highway and the instrument panel in the daytime is concerned.

2. The amount of light reflected from the top of the dash onto the windshield and into the eyes of the driver averages over 15% of the average scene luminance.

3. The amount of light scattering dirt on automobile windshields is small, and variable as one would expect, averaging only 4.8%.

4. Glare sources of exceedingly high intensities were noted and all cars tested had chromium trim of various types in the field of the view of the driver.

5. Dash panel instrument illumination was generally much too low in the daytime to permit the meters to be seen at a glance. This is in addition to the problem in 4 above which further interferes with quick seeing.

B. Every vision engineering defect noted in this study can be remedied by the automobile manufacturers by practical and economical changes. Specific recommendations are made in the text.

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3) Borish, Irvin M., Clinical Refraction, Chicago, The Professional Press, 1949, Pg. 110.

4) Duke Elder, Sir W. Stewart, Textbook of Ophthalmology, Mosby Co., Vol. IV, 1950, Pg. 4492

5) I.E.S. Handbook, 3rd Edition, Illuminating Engineering Society, 1860 Broadway, New York, New York, 1959. Sect. 12, Pg. 6; also see Sect. 2, Sect. 14, Pg. 3, Sect. 15, Pg. 3.

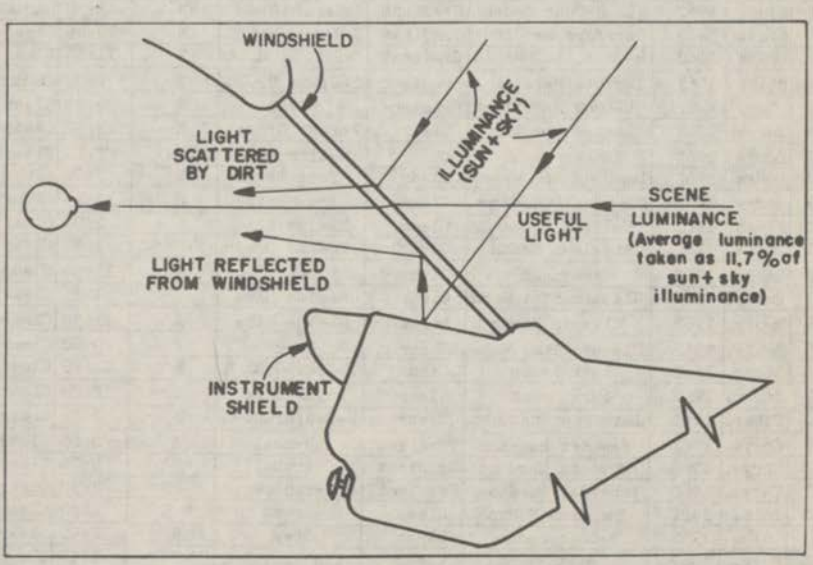

FIGURE 1 SOURCES OF VEILING GLARE IN AN AUTOMOBILE WINDSHIELD

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TABLE I. Specific Automobiles Studied.

Car	Make	Year	Model	Windshield	Color of Dash	Dir.-Car	Time	Sky
1	Chevy	1962	II-400 Nova	Clear	Royal Blue	W	12:35	Clear
2	Chevy	1960	Biscayne Sedan	Clear	Royal Blue	S W	11:12	Clear
3	Chevy	1961	Bel Air	Clear	Royal Blue	S W	12:15	Clear
4	Chevy	1962	4-Door Sedan	Clear	Med.-Drk.Grey	S E	2:15	Clear
5	Chevy	1962	Impala Hardtop	Gradient	Maroon	S W	3:25	Clear
6	Chevy	1962	Impala Hardtop	Clear	Med.-Drk.O.Grn.	N	5:00	Lt. Haze
7	Chevy	1961	4-Door Sedan	Clear	Forest Green	N	4:15	Clear
8	Chevy	1962	Impala Hardtop	Gradient	Med.-Lt.Bronze	N	1:30	Clear
9	Chevy	1962	Corvair 700	Clear	Drk.Beige	N-NW	4:05	Clear
10	Chevy	1962	Corvair 700	Clear	Drk.Beige	W	4:35	Cloudy
11	Chevy	1960	Corvair	Clear	Black	S W	10:40	Clear
12	Chevy	1961	Corvair Monza 900	Clear	Beige	E	4:25	Clear
13	Ford	1962	Sports Coupe	Clear	Fire Eng. Red	S	9:20	Clear
14	Ford	1962	Galaxie Sedan	Clear	Blue-Green	E	2:40	Clear
15	Ford	1961	Galaxie Hardtop	Clear	Black	S W	12:50	Clear
16	Ford	1961	Falcon 2-Door	Clear	Black	N	2:15	Clear
17	Ford	1962	Falcon 2-Door	Clear	Black	W	3:20	Clear
18	Ford	1961	Falcon Sta. Wagon	Clear	Med. Blue	N	9:50	Clear
19	Ford	1960	Sunliner Convert.	Clear	Black	S	11:30	Clear
20	Ford	1960	Convert. Top Down	Clear	Fire Eng. Red	N	1:35	Clear
21	Ford	1960	Fairlane 500	Clear	Forest Green	N	5:15	Cloudy
22	Pont.	1962	Star Chief Sedan	Gradient	T-Brwn; B-Tan	E	2:25	Clear
23	Pont.	1962	Grand Prix Hdtp.	Gradient	T-Maroon;B-Red	E	12:20	Lt. Haze
24	Pont.	1960	Star Chief Sedan	Gradient	Pea Green	E	2:55	Pt. Cldy.
25	Pont.	1961	Bonneville Convert.	Gradient	T-Ryl.Bl;B-Bl.	S W	10:00	Clear
26	Pont.	1961	Tempest Sedan	Gradient	Drk. Royal Bl.	S	4:40	Clear
27	Pont.	1961	Tempest Sedan	Gradient	T-Wine; B-Red	E	5:00	Clear
28	Olds.	1961	2-Door Hardtop	Gradient	T-Brwn; Tan P.	N	10:45	Clear
29	Olds.	1961	88 2-Door Hardtop	Gradient	T-Brwn; Brz. P.	S W	1:35	Clear
30	Olds.	1962	Super 88 Sedan	Gradient	T-Ryl.Bl; Bl. P.	N	9:00	Clear
31	Olds.	1962	88 4-Door Sedan	Gradient	T-Maroon; Red P.	W	3:30	Lt. Haze
32	Olds.	1962	Starfire Hardtop	Gradient	T-Maroon; Red P.	N	10:45	Clear
33	Buick	1962	4-Door Sta. Wagon	Gradient	T-Ryl.Bl; Bl. P.	E	11:55	Clear
34	Buick	1961	Invicta Hardtop	Gradient	T-Brwn; Bg. P.	E	2:00	Lt. Haze
35	Cad.	1962	4-Door Hardtop	Gradient	Black	W	4:20	Clear
36	Dodge	1962	Lancer Hardtop	Clear	Forest Green	E	12:32	Clear
37	Dodge	1962	Lancer Sedan	Clear	Medium Blue	W-SW	2:10	Clear
38	Dodge	1962	Dart 440 Sta. Wagon	Clear	Rose Beige	S	3:00	Clear
39	Dodge	1962	Dart 440 Sta. Wagn	Clear	Rose Beige	S	12:15	Cloudy
40	Plmth.	1961	Valiant Sedan	Clear	Medium Blue	S	4:00	Clear
41	Rmblr.	1962	American Sedan	Clear	Medium Green	W-SW	3:10	Clear
42	Rmblr.	1962	American	Clear	Grey	S	11:50	Clear
43	Rmblr.	1962	Classic Sta. Wagon	Clear	Medium Blue	S	1:35	Clear
44	Rmblr.	1962	Classic Sedan	Solex	Medium Blue	E	11:30	Clear
45	Rmblr.	1962	Classic Sta. Wagon	Clear	Grey	E	10:50	Clear
46	Stbkr.	1962	Lark Sedan	Clear	T-Drk.BG;BG. P.	E	11:25	Cloudy
47	Stbkr.	1962	Lark Sedan	Clear	Royal Blue	E	12:20	Clear
48	Stbkr.	1962	Lark Daytona Hdtp.	Clear	T-Red; Brwn. P.	S	3:15	Clear
49	Chrys.	1962	Newport Hardtop	Gradient	Charcoal	S	4:25	Cloudy
50	Chrys.	1960	Newport Hardtop	Gradient	Charcoal	S	4:00	Clear
51	Chrys.	1960	Imperial Hardtop	Gradient	Dark Brown	N-NE	2:50	Clear
52	Rnlt.	1961	Dauphine Sedan	Clear	Cream	N E	1:30	Clear
53	VW	1962	2-Door Sedan	Clear	Grey	N	11:50	Clear
54	Merc.	1962	Comet Sedan	Clear	Fire Eng. Red	W-NW	1:30	Cloudy
55	Merc.	1961	Monterey Sedan	Gradient	Med.-Drk. Beige	N E	12:00	Cloudy
56	Merc.	1962	4-Door Sta. Wagon	Gradient	Med.-Drk. Brown	N W	4:10	Lt. Haze

Abbreviations: Dir.= Direction; T.= Top; B.= Bottom; P.= Panel.

TABLE II. Average Scene % Reflectance

Illuminance From Sky	Illuminance From Earth	% Earth Reflectance	Earth Surface
6900	1080	15.65	Concrete Road
7000	880	12.57	Dirt
7100	500	7.04	Green Field
7200	900	12.50	Blacktop
7200	1380	19.17	Gravel Parking
7300	1040	14.25	Concrete
7400	950	12.84	Dirt
7700	380	4.93	Green Field
7800	1280	16.41	Gravel Road
8000	570	7.12	Blacktop
8150	830	10.18	City Street
7850	680	8.66	City Street
7466	872	11.7%	Av. Scene

TABLE III. LIGHT CHARACTERISTICS OF INSTRUMENT PANELS AND WINDSHIELDS

Car	Sky Illuminance Ft. Candles	Av. Scene Ft. Lamberts (Sky x 11.7%)	Illumination on Dash Ft. Candles	Luminance of Instrument Panel, Ft. Lamberts			Max. Glare in View Ft. Lamb.	Eye to Panel (dm.) Seat as is	Speedometer Vertical No. Size	Odometer Vertical No. Size	Windshield					
											Transmission	Dash Reflection		Outside Dirt		Inside Dirt
				Max.	Min.	Av.						Ft.L.	%	Ft.L.	%	Ft.L.	%
1	6640	770	258	130	21	65	90,000	72	48'	19'	88.3%	91	11.7	15	1.9	5	0.6
2	6530	764	143	490	12	86	60,000	67	1°27'	23'	90.3%	36	4.7	0	0	4	0.5
3	7690	895	157	65	13	36	950	72	1°14'	19'	91.8%	46	5.1	10	1.1	1	0.1
4	7720	903	115	70	24	40	360	64	1°4'	16'	79.3%	53	5.9	17	1.9	0	0
5	5410	634	46	40	11	21	7,500	77	1°9'	18'	88.7%	873	138.0	80	12.6	0	0
6	3750	449	50	28	12	18	63	77	1°9'	18'	89%	67	14.9	10	2.2	15	3.3
7	5370	652	186	100	18	45	140	69	1°19'	20'	87%	53	8.1	50	7.7	3	0.5
8	8670	1,015	118	66	22	39	1,500	81	1°6'	17'	76.3%	117	11.8	0	0	10	1.0
9	5670	663	214	150	13	75	400	63	1°20'	25'	87.2%	80	12.1	30	4.5	15	2.3
10	1290	151	79	140	8	39	140	63	1°20'	25'	90%	25	16.5	15	9.9	2	1.3
11	6110	715	172	480	16	129	420	64	1°22'	24'	90.6%	14	2.0	28	3.9	30	4.2
12	5290	614	179	225	21	74	225	67	1°17'	23'	85.7%	34	5.5	0	0	50	8.1
13	3860	452	214	805	18	88	700	72	1°0'	21'	80%	57	12.6	15	3.3	0	0
14	7280	852	200	170	25	100	1,800	72	1°16'	19'	92.2%	38	4.5	45	5.3	7	0.8
15	7500	877	257	410	30	106	1,600	65	1°27'	21'	92.2%	30	3.4	25	2.9	2	0.2
16	7280	852	272	670	9	189	670	71	1°34'	22'	85.5%	22	2.6	5	0.6	17	2.0
17	5570	652	178	92	8	45	1,100	65	1°43'	24'	86%	171	26.2	5	0.7	0	0
18	5780	676	164	165	11	50	220	72	1°33'	21'	90.6%	65	9.6	10	1.5	8	1.2
19	7280	852	143	170	10	56	2,800	70	1°43'	22'	88.6%	79	9.3	5	0.6	5	0.6
20	7280	852	1,640	240	100	205	500,000	77	1°34'	20'	86.2%	89	10.4	25	2.9	0	0
21	1050	123	121	115	18	45	170	70	1°43'	22'	87.9%	25.5	20.9	5	4.1	4	3.3
22	6420	752	140	98	20	60	14,000	76	1°12'	18'	58.5%	26	3.7	15	2.0	3	0.4
23	4830	565	143	97	22	46	110	72	1°16'	19'	63.8%	38	6.8	0	0	3	0.5
24	6320	739	137	130	23	56	310	74	1°21'	19'	72.2%	24	3.3	1	0.1	0	0
25	5470	640	187	63	15	37	4,350	72	1°14'	19'	77.7%	18	2.8	56	8.8	4	0.6
26	5460	639	172	350	12	63	350	67	1°22'	20'	79.7%	20	3.1	5	0.8	0	0
27	3750	418	73	37	9	17	105	67	1°22'	20'	75.2%	4	1.0	0	0	2	0.5
28	6420	751	128	95	19	48	200	75	1°53'	21'	72.3%	27	3.6	5	0.7	0	0
29	8040	940	208	110	26	53	1,400	71	1°59'	22'	88.2%	99	10.5	55	5.9	0	0
30	5350	626	124	62	11.5	26	62	71	1°47'	19'	67.3%	15.9	2.5	11	1.8	2	0.3
31	5670	662	131	63	12	32	250	71	1°47'	19'	67.4%	124	18.8	65	9.8	8	1.2
32	7490	876	117	130	12	44	130	72	1°46'	19'	69%	16	1.8	9	1.0	8	0.9
33	9320	1,090	172	150	17	48	360	76	1°24'	19'	79%	90	8.3	5	0.5	0	0
34	7170	839	214	1,700	80	405	1,700	86	1°24'	16'	78.4%	26	3.1	15	1.8	0	0
35	4820	564	136	110	8	40	315	77	1°25'	18'	86.2%	305	54.1	150	26.6	15	2.7
36	7550	883	200	125	20	60	350	71	1°3'	22'	92.2%	48	5.4	17	1.9	8	0.9
37	7500	877	214	140	17	50	10,000	70	1°4'	22'	94.7%	68	7.8	18	2.1	0	0
38	9350	626	256	220	15	87	600	62	1°12'	22'	91%	60	9.6	18	2.9	9	1.4
39	1180	136	114	130	9	40	230	67	1°7'	20'	94.7%	33	23.9	14	10.1	7	5.1
40	5780	676	286	175	38	114	7,200	74	1°8'	21'	88%	90	13.3	5	0.7	5	0.7
41	6580	770	204	200	35	76	580,000	73	1°4'	21'	99%	134	17.4	13	1.7	19	2.5
42	7700	902	300	270	41	80	810	70	1°9'	22'	94.7%	153	17.0	25	2.8	30	3.3
43	7280	888	193	120	32	65	120	74	1°19'	21'	92.8%	538	65.2	5	0.6	20	2.4
44	7820	914	286	145	40	94	145	75	1°18'	21'	82.9%	238	26.8	20	2.2	0	0
45	7020	822	250	150	46	73	570	70	1°24'	22'	93.2%	651	79.3	0	0	0	2.4
46	1710	200	124	62	3	42	290	79	22'	19'	92.3%	6.5	2.7	6	3.0	4	2.0
47	8380	977	300	135	26	98	830	76	23'	20'	85.8%	116	11.9	5	0.5	0	0
48	6640	777	243	104	34	57	260	74	28'	21'	92.2%	71	9.2	8	1.0	16	2.1
49	621	73	74	808	4	33	808	79	1°8'	17'	75.8%	7	9.6	3	4.1	1	1.4
50	6420	753	214	350	19	101	305	79	1°8'	17'	77.8%	9	1.2	14	1.9	19	2.5
51	7650	895	143	810	10	47	3,400	84	1°30'	18'	79.0%	52	5.8	70	7.8	0	0
52	7900	878	164	680	49	188	1,650	63	55'	29'	82.0%	179	20.4	5	0.6	10	1.1
53	8030	939	357	210	21	99	20,000	66	44'	21'	89.0%	47	5.0	5	0.5	5	0.5
54	1500	176	136	160	8	41	160	71	1°8'	19'	81.9%	40	22.7	7	4.0	0	0
55	1500	182	129	95	25	47	250	70	1°15'	20'	77.9%	72	39.5	10	5.5	8	4.4
56	3220	377	250	130	29	57	560	76	1°13'	18'	76.3%	52	13.8	55	14.6	3	0.8
Av.	5840	683	204	205	22	72	20,047	72	1°16'	20'	86.4%		15.5		3.5%		1.3%

STATEMENT OF ROBERT L. DAVIS, VICE PRESIDENT, DAVIS AIRCRAFT PRODUCTS, INC., NORTHPORT, LONG ISLAND, N.Y.

Mr. Chairman, I am Robert L. Davis, vice president, Davis Aircraft Products, Inc., Northport, Long Island, N.Y. I am a member of the legislative committee of the American Seat Belt Council which comprises numerous manufacturers in the seat belt industry. I appear here today as a representative of the Davis Aircraft Products Corp., the American Seat Belt Council and as a private citizen in support of the principals of the bill being considered today, H.R. 133, to amend title 3 of the Public Health Service Act to establish a National Accident Prevention Center.

First, I should like to tell you a little bit about the American Seat Belt Council. This council was established to insure that seat belts that are manufactured would meet adequate safety standards. All members of the American Seat Belt Council must comply with the standards adopted by the council and all seat belts sold must carry the stamp of approval of the council. This stamp of approval guarantees that the belts have been tested to current SAE standards.

As you can see, the various industries that are members of the council are vitally concerned with safety and I believe that the establishment of an accident prevention center such as the one proposed in H.R. 133 would be one of the greatest steps ever taken to systematically attack the epidemic problem of accidents. As I understand it, the purpose of such a center would be to correlate all available knowledge relating to cause and prevention of accidents.

I further understand that the legislation would provide a special authority to create a unit comparable to the Communicable Disease Center, the Sanitary Engineering Center, and the Arctic Health Research Center. It would encompass research into medical (and psychological) and environmental (engineering) causes and preventive measures, pilot studies, demonstrations, technical aid, and project grant activities. In addition, machinery would be set into motion to enumerate types of causes such as vehicular, home, occupational (with the exception of certain phases), and farm accidents.

We, of the American Seat Belt Council, believe that such a center as the proposed National Accident Prevention Center is vital and is an augmentation and not a duplication of the activities currently being carried on by the various departments of the Government, the National Safety Council, and organizations such as the American Automobile Association and others. These organizations currently are performing meritorious service. However, the council feels that the correlation of the information provided by these various organizations, associations, and governmental agencies, is essential if we are to obtain all information possible with regard to accidents and in order to prevent these accidents. It would provide a central source of information such as the Congress has in the Library of Congress and its Legislative Reference Center and such as the Institute of Health has in its Medical Library. It seems to me that the centralization of information will provide a most necessary adjunct to the safety program, and again I say that I, as an individual, and as a representative of the Davis Aircraft Corp., and as a member of the American Seat Belt Council Legislative Committee, heartily endorse the principles of this legislation and the continuing efforts ofthis committee.

STATEMENT BY DAVID M. MARSH, MANAGER, ASSOCIATION OF CASUALTY AND SURETY COMPANIES

The Association of Casualty and Surety Companies is a voluntary nonprofit organization with a membership of 131 capital stock insurance companies. We take pleasure in submitting the following recommendations regarding H.R. 133.

In the view of this association, based upon many years of experience in support of measures directed toward the prevention of highway traffic accidents, Congress should enact this measure following its amendment by your committee to more accurately define its purpose and to limit its scope to the encouragement and implementation, by all possible means, of research projects designed to enable responsible official agencies, at all levels of government, to effect those measures necessary to the control of the highway traffic accident problem.

While fully in accord with the Federal Government adopting every reasonable means to encourage States and cities (in both their official and nonofficial capacities) to attack the problem of highway traffic accident prevention, we strongly urge that Congress refrain from the enactment of any measure which, in its application, would in any way encroach upon the responsibility of State and city

government for the regulation and supervision of the movement of all manner of traffic on public streets and highways. Further, we urge that any such bill enacted by Congress should clearly avoid giving the Federal Government any authority to control public and private traffic action programs other than that which presently exists and further, such a bill should not operate either to discourage or in any manner curtail the programs and activities of State and local private agencies now doing so much that is good in the cause of highway safety.

We appreciate the interest of this subcommittee and of the Committee on Interstate and Foreign Commerce in the important field of traffic safety.

STATEMENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION BY EDWARD PRESS, M.D., M.P.H., CHAIRMAN, ACCIDENT PREVENTION COMMITTEE

I have appeared before this subcommittee on February 8, 1962, for a similar statement. The statement was submitted and the discussion at the time, has been printed in the records of the subcommittee hearing and I shall not takeyour time to detail its contents again.

In summary, I explained that I testified as spokesman for the American Public Health Association and its branches and affiliates in 48 States in this country. I referred to 10 separate resoltuions on the subject of accident prevention passed during the annual general conclaves of the American Public Health Association in the past 11 years. This association is not limited to physicians in public health only but includes a wide variety of persons such as nurses, nutritionists, engineers, administrators, inspectors, etc.

One of these resolutions, passed 7 years ago, resolved "that consideration be given to the advisability of establishing within the Federal Government a National Accident Prevention Center to coordinate the activities of various accident prevention agencies in order to improve the safety of the people of the United States through conducting research, investigations, experiments, and demonstrations relating to the cause of and means of preventing accidents."

I also gave examples of how such a center might have expedited research in the prevention and treatment of periodic increases in accidents as well as regularly recurring accidents that could in a way be considered "epidemics" and "endemics" of accidents. Examples were cited in the fields of lead poisoning and of injuries from wringer-type, home washing machines. The relatively scant amount of research funds devoted to accidents and the need for greater coordination of safety activities were also mentioned.

Rather than review in any more detail the material already presented, I would like to take this opportunity to comment on one of the points raised in last year's hearings. It had to do with an opinion that the prevention of accidents was an engineering science rather than a medical activity and that the emphasis put on the medical and psychological aspects of accident prevention (through placing the Center in the Public Health Service) would result in a disruption of the safety movement. There were also opinions that the proposed research or activities might conflict with or duplicate existing activities under other auspices. In relation to this latter point, it would not be difficult to include amendments in the bill that would result in obtaining advice, consultation, and/or consent by representatives of other agencies involved when and if potential conflicting or duplicating activities might be undertaken. However, most administrators would consider this part of the standard operating procedure.

I would like to cite an example of a specific type of accident that I believe would serve to illustrate how one of the problems in this area could more expeditiously be attacked with the aid of an Accident Prevention Research Center or laboratory.

I happen to be chairman of a Committee on Hazards to Children of the American Standards Association which incidentally is basically an engineering group. One of the projects on which this committee is working is the exploration of flame resistant standards for children's clothing. Some of you will remember the outbreak or "epidemic" of injuries and fatalities resulting from the introduction of children's cowboy chaps with long rayon pile fibers and the "torch" sweaters made out of similar fabrics. The culprit in this instance was not so much increased carelessness or increased exposure to fire but a considerably increased flammability of the fabric. As an indirect result and after a latent "incubation" period of 9 years from the cowboy chaps incident and 3 years from the more spectacular human "torch" sweaters, a Federal Flammability Fabrics Act was

put into effect. This helped by prohibiting excessively flammable fabrics from being sold in the United States. Although this measure largely controlled burns from very highly flammable clothing, it had relatively little effect on the continuing week-by-week "endemic" burns from other types of clothing catching on fire. How could a National Accident Prevention Research Laboratory help this? In my opinion, there are several ways:

1. SHARPER DELINEATION OF THE PROBLEM

In spite of the hard work by the National Fire Protective Association, the U.S. Department of Agriculture, the Federal Trade Commission, and members of the chemical and cotton industry, the progress was relatively slow in delineating the details of the problem. Specific well-documented information on all the major circumstances involved in the casualties was and is scant. Even now, 18 years after the cowboy chaps incidents and 12 years after the "torch" sweaters, we still do not know how many people in this country die or are injured from clothing fires. I contacted officials of the National Fire Protective Association, the U.S. Public Health Service, the National Safety Council, the National Board of Fire Underwriters and others. Not one of them could give me specific figures, even on fatalities.

Newspaper accounts similar to those in exhibit A attached were clear indications that a substantial problem existed. Finally, I made a personal visit to the Cook County (Chicago) coroner's office and with the aid of personal phone calls to the coroner in Cleveland, Ohio, and Miami, Fla., some specific facts were elicited. For example, during 1962, a total of 27 persons lost their lives because their clothing caught fire in Cook County, 21 of these in the city of Chicago and 6 in the suburban areas of the county. In Cuyahoga County, which includes the city of Cleveland and has a population of 1,750,000 persons, there were 23 deaths in 1962, stemming from the ignition of clothing. In Dade County, Fla., because of the mild temperature only a minimum of space heating is required. In 1960 there were five deaths there.

In 1960, according to the National Vital Statistics Division of the Public Health Service, there were a total of 7,645 deaths as a result of fire and explosion. This includes several other types of deaths besides those due to clothing. A statistical study by the Metropolitan Life Insurance Co.[1] estimates that 13 percent of deaths from burns among their policyholders were due to the ignition of clothing. If we were to extrapolate this figure of 13 percent to the national total of 7,645, it would amount to 994. This excludes an additional 13 percent where burns ensued in connection with smoking in bed or in an upholstered chair.

2. FLAMMABLE FABRICS STANDARDS

As a result of the Flammable Fabrics Act, which became effective on June 30, 1954, the Secretary of Commerce promulgated a safety standard (Flammability of Clothing Textiles, Commercial Standard 191–53) and developed rules and regulations in this area.

This current standard for plain surface textile fabrics, for example, is calibrated to allow fabric to be sold unless it is so dangerous that it ignites in 1 second. Even then, if it does not burn rapidly enough for the flame to travel 5 inches in 3½ seconds with the cloth at a 45° angle, it is considered safe for wearing apparel. In a study of about 100 burned cases that were severe enough to require hospital treatment, undertaken by the National Fire Protection Association and the American Academy of Pediatrics, it was found that 109 of 120 different clothing samples tested took more than 1 second to ignite. In none of the fabrics involved did the flame travel the 5 inches at a 45° angle in 3½ seconds or less. They all took longer than this. Thus, although the Federal Flammable Fabrics Act is a definitely helpful step forward, I feel that if a National Center for Accident Prevention Research was in operation, this step would have been made more effective, would have been taken sooner, and additional steps would probably have been taken.

3. RESEARCH ON FLAME RETARDANTS

A considerable amount of research has been done on flame retardants. In summary, it was found that chemical compounds containing phosphorus and nitrogen gave excellent flame resistant qualities to textiles. A compound called THPC (tetrakishydroxymethylphosphonium chloride) is mixed with another one called APO, whose chemical name is tris (1-aziridinyl) phosphine oxide. By

[1] Statistical Bulletin, October 1960, Metropolitan Life Insurance Co.

mixing THPC and APO in a 1-to-1 mole ratio, wetting the fabric, squeezing out the excess solution, drying, during and washing, a good flame retardant fabric results. Samples of such fabrics have been laundered over 100 times in home laundry washing machines and have been subjected to 60 or more commercial launderings including chlorine bleaching without losing flame retardancy. They have also retained crease resistance, rot resistance, mildew resistance, and glow resistance.

You may be interested in seeing and feeling some of these fabrics so treated and noting the difference in flammability. (Sample fabrics circulated and difference demonstrated.) Unfortunately, this treatment also adds to the cost of the fabric and depending on the volume manufactured, this additional cost amounts to from 4 to 13 or more cents per yard for the fabric treated. As far as most of the cotton industry is concerned, they feel the public is not willing to pay the additional cost unless it gets down to a range of 3½ cents per yard. Thus, at the present time, for general clothing purposes, relatively little of the commonly marketed material has been treated with flame retardants.

I feel that with the aid and assistance of a National Accident Prevention Research Laboratory, progress in this area could be greatly expedited, not only in the field of more research but also in the areas of education and application of research.

In summary, I believe that in just this single area of accident prevention that pertains to one type of burn that kills about 1,000 persons annually—the type associated with the ignition of clothing—scores or hundreds of lives could be saved years earlier with such a center or laboratory than without. Similar benefits, in my opinion, would result in many other areas of accident prevention.

STATEMENT BY J. AUSTIN LATIMER, COUNSEL FOR AUTOMOTIVE SERVICE INDUSTRY ASSOCIATION

Mr. Chairman, gentlemen of the committee, thank you for the opportunity to submit this statement on behalf of the Automotive Service Industry Association, located at 168 North Michigan Avenue, Chicago, Ill. ASIA, as it is known, is a nonprofit trade association serving manufacturers, wholesalers, warehouse distributors, and rebuilders of automotive parts, equipment, tools, supplies, accessories, chemicals, and refinishing materials, with membership affiliations of over 10,000 firms, representing nearly a half million people, employed in the automotive aftermarket.

Obviously, as an association in the automotive service field, we have both an individual's interest and stake in highway safety, as well as a professional concern. Our thousands of firms and members and their families make up a great segment of the motoring public. Our association's safety slogan has long been "Highway Safety Is Our Business."

It is our segment of the automotive business which, since the early days of the auto industry, has contributed so much to highway safety by making available through the years products which have become standard equipment on today's motor vehicles—items such as the windshield, the headlight, tail light, direction signals, horns, windshield wipers, and so on. Like Marconi and his radio, certain circles scoffed at some of these items and action was deferred for years before they were accepted.

We have a long history of interest in legislation pertinent to the motor vehicle and its appurtenances. That explains our interest in appearing at this hearing on H.R. 133, because it may well affect the research necessary, the coordination desirable and the stimulation long overdue to cut the needless slaughter on our highways.

As you know there are many groups active in safety work, with a long line of "credits" to whom they contribute or with whom they cooperate, as well as studies they have made of the many facets of automotive safety. We are not devoting ourselves to driver education, although we favor it; we are not working actively for improvements in the vehicle registration methods nor highway engineering, although we admit changes may be desirable. We are not developing counter agents for the drunken driver problem, much as we oppose it and many other accident problems. We are devoting ourselves to a concentrated effort to foster State regulated periodic motor vehicle inspection, because motor vehicle maintenance and the inherent safety values therein, is something we know about.

Slightly over 37 million motor vehicles 3 to 9 years old were on our highways at the end of 1960, compared with 29.7 million 5 years earlier. Today's automobiles are soundly engineered and sturdily built, but as with any machine, wear and constant use inevitably take their toll in safety and efficiency.

The mechanically unsafe car has always been a contributing cause to highway accidents and it will grow in that role as the vehicle registration increases through the years ahead. Among the 18 States and the District of Columbia which already have periodic motor vehicle inspection, studies have revealed as high as 55 percent of the vehicles inspected are unsafe because one or more parts affecting safe driving conditions required immediate attention.

The U. S. Commerce Department's Bureau of Public Roads suggests that vehicle condition plays a more important part in accidents than has been believed. We know that in the reporting procedure of traffic accidents, unsafe vehicle conditions have not been given proper recognition as a contributory cause of traffic accidents. There are a number of reasons for this, including—

1. Vehicles are often damaged beyond the point of determining their true condition at the time of accident;
2. Accident investigations tend to concentrate on the driver and driving conditions;
3. Many investigators are not trained to recognize evidence of unsafe vehicle conditions;
4. Accident reporting procedures in different States are not uniform;
5. Drivers are reluctant to admit maintenance neglect, fearing assertion of contributory negligence in civil law suits;
6. Vehicles are often defective because of the lack of proper inspection.

The expansion and improvement of our highway system is increasing; the number of motor vehicles on the highways is increasing, more and more people are driving more frequently and longer distances. The problem of highway safety is growing and destined to grow for years.

There will be additional burdens placed on the many fine organizations in the field of safety. The time, effort, and moneys they will need to continue and to expand their efforts will become more and more burdensome.

For that reason the establishment of a central clearing house under Federal Government auspices, to coordinate all the manifold aspects of probing the causes of highway accidents and their prevention, could be beneficial.

It would be easy to say to this committee that any action taken by an group, be it private, municipal, State, or Federal Government, designed to prevent traffic accidents and thereby save lives, prevent injuries to persons and to property would thus save the taxpayer a staggering burden, and so is to be commended. However, we urge strongly upon this committee that the members consider the possibility of duplication by the proposed National Accident Prevention Center of activities already being performed and responsibilities assumed by such organizations. We heartily oppose unnecessary duplication, and waste of taxpayers' moneys.

In the field of proper periodic motor vehicle inspection legislation the research studies to implement it, there is much room for help with little danger on overlap of responsibility or activity.

Many Federal agencies and offices have already become aware of the problem of inspection and have endorsed the principles of periodic motor vehicle inspection. Among them are Secretary A. Ribicoff (HEW), and President Kennedy's own Safety Committee, headed by William Randolph Hearst, Jr.

Knowing that this committee's purpose is to construct legislation in the public interest, and knowing that since 1900 we have killed well over 1,300,000 people on our highways, injured countless millions, and that unless something is done about it 700,000 of our friends, neighbors, relatives and business associates, will meet death on the highways by 1975, we respectfully urge the committee to consider the effect of any legislation in the safety field on the needs of the nation for periodic motor vehicle inspection. It is a herculean task and we do not wish to demean any of the fine private, and State, or Federal organizations which have worked long and hard in this field. We do know that the goal of effective periodic motor vehicle inspection is yet a long way off and that it is, strictly speaking, vital for many Americans living and as yet unborn.

STATEMENT BY COL. GAYLORD B. KIDWELL, U.S. ARMY (RETIRED)

Mr. Chairman and committee members, may I express my appreciation for your gracious invitation to appear before your committee. Perhaps a brief summary of my experience over a 9-year pursuit to improve safety techniques to prevent accidental entrapment and suffocation of children in idle refrigerators and freezers might be helpful in your deliberations of H.R. 133. Incidentally, my services have been rendered on a purely voluntary basis in the capacity of a private citizen and without benefit of remuneration of any kind.

I take this time of the committee to point up a particular problem in safety that, had a center, such as is proposed by H.R. 133, been in existence at the time legislation was enacted regarding refrigerators, many years of time required to obtain the results desired by the legislation would have been saved, to say nothing of the effort and cost incident thereto.

This deduction is not intended as a reflection on any agency of the Government responsible for safety. In the years I have devoted to the problem, every agency I have contacted has been most cooperative. However, the scope of their activity in the particular field in which I was deeply interested (and I am sure the Congress was, or this legislation would not have been enacted into law) was limited. The establishment of a centralized depository or clearinghouse for information and data as proposed by H.R. 133 I believe is not only vital but will serve a useful and beneficial purpose.

Shortly after my retirement from active military service in 1953, the problem of these tragic childhood accidents was high in the public mind. Several remedial legislative bills had been introduced in both Houses of the Congress, and at least two hearings had been held with another one in prospect. Shortly thereafter Public Law 930, which was sponsored by the Honorable Kenneth A. Roberts, of Alabama, was enacted in 1956. This law, as you know, required that subsequently all new household refrigerators shipped in interstate commerce had to be equipped with doors that could easily be opened from the inside.

Regardless of the safety benefits that were hoped for through this new law there still remained a national inventory of some 60 to 80 million old units with conventional locking devices to be coped with. It is to this aspect of the problem that I have mainly directed my efforts.

Hope for the protection of children from accidental entrapment in these boxes has rested mainly in safety educational programing and the enactment of State and local laws and controls. Educational programing consisted of an intense concentration on "abandoned or discarded" refrigerators and freezers. This emphasis may very well have unintentionally invited neglect of precaution being taken with boxes temporarily out of service, but intended for an early return to use. Examples of such temporary idleness are those in vacant apartments and houses, on back porches of homes and summer cottages, or merely stored in a basement or garage awaiting transfer to another location. There are numerous newspaper accounts of children being killed under these circumstances.

The safety precautions advocated, until recently, seemed hardly suitable on boxes intended to be used again. They were cumbersome to apply and somewhat damaging to the units themselves. These actions included the complete removal of doors, hasps, gaskets, and even boring holes in the cabinet with an electric drill. True, any of these actions would be effective on a box that had been discarded and was headed for the junkyard. However, none were practicable for application by an owner or housewife who wished to render a temporarily idle box harmless.

The direction of search for improvement seemed to lie in devising a number of simple things that a homeowner or housewife might do that required a minimum of mechanical skill. In pursuing this search it was my pleasure to consult with many Federal and State officials who had interest and responsibility in this and other safety matters. On two occasions consideration was given to safety devices conceived by me and offered for the free use of the Government and the general public. In both instances the matter of testing and evaluating these devices presented the same problem. The department that had the authority to consider a device and to advocate its use, lacked the capability of independent research and testing.

In the early months of this effort the results of the behavior tests with live children under simulated refrigerator entrapment, conducted by the National Bureau of Standards, were made public. Surprisingly, this report showed that many smaller children made no effort to escape their capture, but merely sat quietly as if awaiting assistance. My little grandaughter, then 3 years old, was one of these children selected for use in the test.

The unexpected and disappointing degree of safety benefits inherent in push-open doors presented another problem. It became apparent that precautions must be taken with regard to new design refrigerators, as well as for the old ones. Such responsibility had not been anticipated by many manufacturers. Some national advertising and pronouncements by educators and editors, indicated assumption that push-open doors were foolproof and entirely safe. Relief from this dilemma, with all its ramifications, did not appear to come within the scope of any single Federal agency. Therefore, with the generous assistance of my Congressman, the Honorable Joel T. Broyhill, of Virginia, facts were presented to separate departments and agencies having means to institute corrective actions, which in due course were forthcoming.

In the summer of 1961, I learned that the Federal Safety Council in the Department of Labor had a function to develop and advocate safety guides for use throughout the Government. I approached the Chairman of this Council offering a "toggle and plate" device to free use by the Government and general public, as one means of preventing child entrapment. In this contact I was introduced and sponsored by Congressman Roberts, the esteemed chairman of this committee. As we proceeded with conferences with the Standards Committee of the Council I was invited to continue my collaboration and assist in writing a new safety guide. The end product is the recent publication of the Council's "Safefy Guide for the Prevention of Refrigerator Entrapment." which follows this statement.

This guide recognizes the entrapment hazard to exist in all idle boxes conceivably exposed to entrance by playing children. It suggests several novel and simple safety techniques that might be applied, among which is the toggle and plate device. Since publication this guide has been sent to all State health officers by the U.S. Public Health Service, and the substance contained therein was promptly adopted and advocated by the National Safety Council, a nongovernmental organization.

It may appear somewhat astounding that safety assistance of rather simple characteristics, as were finally realized in the publication and acceptance of the Council's "Safety Guide," took so many years to accomplish. I venture to suggest that much delay in achieving this goal came about through the absence of centralized safety management, and a lack of independent research and testing capabilities within the framework safety organizations. Elimination of delays and excessive time consumption in realizing the prevention of accidents in other areas, may very well be realized by the establishment of a National Accident Prevention Center.

Thank you.

(The "Safety Guide" referred to in the above statement follows:)

SAFETY GUIDE FOR PREVENTION OF REFRIGERATOR ENTRAPMENT

1. The Standards Division of the Federal Safety Council has recently completed a comprehensive study and review of the safety problem of accidental entrapment and suffocation of children in refrigerators and deep freezers which are not in use.

2. In the pursuit of this study, the Standards Division gave consideration to the implications in Public Law 930, 84th Congress, approved August 2, 1956, to the implications in various State laws dealing with the specific problem, to safety measures advocated in national safety programing, and to measures currently in effect in some executive departments.

3. Other related matters considered in the study were:

(*a*) The results of the child behavior studies of 1957 and 1961. These studies, "Behavior of Young Children Under Conditions Simulating Entrapment in Refrigerators," April 16, 1957, and "The Effects of a Luminous Door Marker on Escape From Refrigerators," August 25, 1961, were prepared by the Children's Bureau of the Department of Health, Education, and Welfare, and the National Bureau of Standards, U.S. Department of Commerce, with the cooperation of the National Electrical Manufacturers Association.

(*b*) A press release and coverage by Dr. Leroy E. Burney, Surgeon General, Public Health Service, May 8, 1959, warning that precautionary actions should be taken with all refrigerators, including the newer types equipped with safety door releases.

(*c*) The position taken by the Federal Trade Commission relative to advertising claims of safety benefits in the new safety doors.

4. As a product of this study and review, the Council finds:

(*a*) That positive precautionary measures should be taken with all units temporarily or permanently taken out of service in their refrigerative function. This is reviewed as particularly significant to agencies having custodial responsibility for vacant housing.

(*b*) That in view of the limited safety benefits disclosed in the child behavior tests, positive precautionary measures should be taken with the new push-open door type refrigerators.

5. The Council therefore recommends that one of the following safety measures be taken where a unit is to be taken out of service:

(*a*) Completely remove doors: This precaution is seen as positive in eliminating the hazard of accidental entrapment and suffocation, and should be taken in all cases where the unit is discarded and not to be used again in its refrigerative function.

(*b*) Secure with metal strapping: This should be applied with hand-operated baling equipment to insure a tamperproof seal. Use of "wire or stout rope" is not recommended.

(*c*) Toggle and plate device: This device has been demonstrated to be adequate protection on units; the locking design will allow easy installation. Its use has the advantage of simplicity and will allow the door to swing freely without locking accidentally. It also permits inspection of the interior. This is viewed as helpful in cases of vacant housing which is subject to inspection from time to time by prospective tenants, or maintenance personnel. (Attached is a diagram demonstrating the installation and use of the toggle and plate device.)

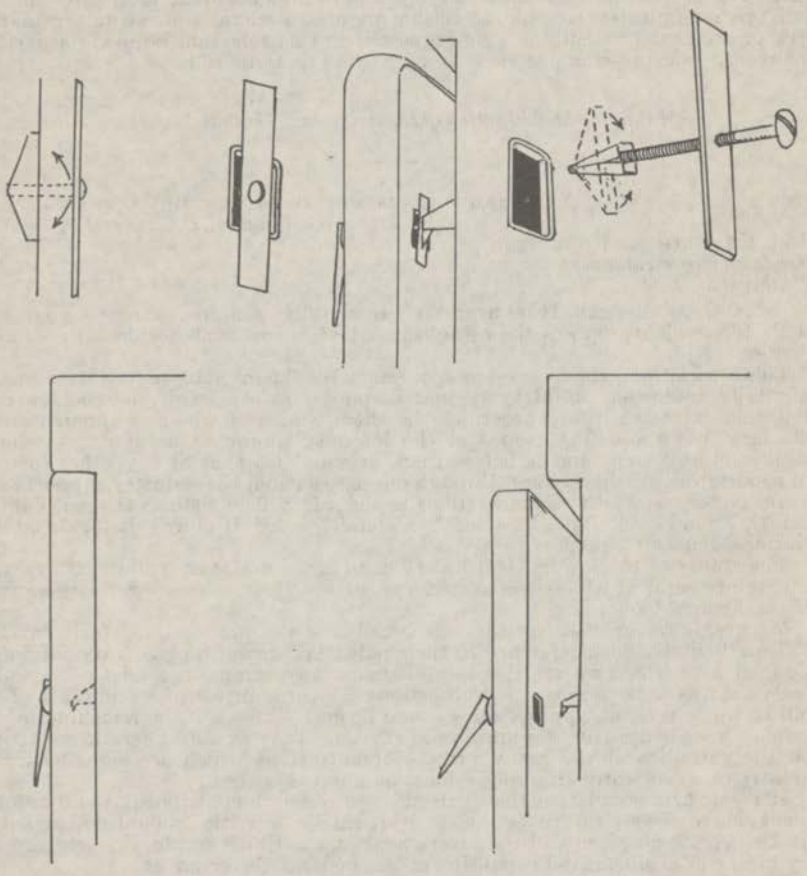
(*d*) Lock with padlock: In rare cases where handles are so constructed as to receive a padlock, this action would be adequate.

(*e*) Metal or wood blocking: In those cases where the removal of latch, magnetic plate, or other locking feature, will leave screw holes exposed, the following action is recommended: attach a metal or wooden block utilizing the exposed screw holes. The block to be of sufficient thickness so as to prevent the door gasket from coming in contact with the face of the cabinet and closing off air to the inside. In some instances, longer screws may have to be employed or the block countersunk to accommodate the added thickness.

6. The Council feels that these are the only foolproof precautionary measures that are available to date.

If anyone has an idea, or a device, that will provide for complete child protection against refrigerator entrapment, submit it to the Federal Safety Council, U.S. Department of Labor, Washington, D.C.

7. Private citizens, manufacturers, dealers, Federal and State agencies owning refrigerators and deep freezers should check State, municipal, and local laws and regulations concerning the abandonment, storage, or "junking" of refrigerator units.



[TELEGRAM]

WASHINGTON, D.C., *April 22, 1963.*

Hon. KENNETH A. ROBERTS,
Chairman, Subcommittee on Health and Safety, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

The American Mutual Insurance Alliance, a trade association with a membership of approximately 120 mutual fire and casualty companies, whose home office is number 20 North Wacker Drive, Chicago, Ill., respectfully calls to your attention that due to the loose structure contained in the bill, H.R. 133, we believe it is subject to misinterpretation and that State and private agency activities will be duplicated by the Federal Government. We urge the committee to consider seriously the detrimental effect of any encroachment upon local government and private industry by the establishment of a Federal superstructure in the area of accident prevention. We request that this telegram be made a part of the record as expressing our views in opposition to H.R. 133.

WALLACE M. SMITH,
Manager, Midatlantic Office, American Mutual Insurance Alliance.

NATIONAL ASSOCIATION OF MOTOR BUS OWNERS,
Washington, D.C., April 8, 1963.

Hon. KENNETH A. ROBERTS,
House of Representatives,
Washington, D.C.

DEAR CONGRESSMAN ROBERTS: We are writing you in regard to your bill, H.R. 133, which proposes the establishment of a National Accident Prevention Center.

This association, which serves as spokesman for the intercity motorbus industry, is vitally interested in highway and employee safety. Our member carriers maintain extensive safety programs the effectiveness of which is apparent from the fact that the safety record of the intercity motorbus industry has shown steady improvement and is better than, or equal to, that of any other form of transportation. Directly and through our association, the industry supports and works closely with other organizations in the safety field such as the Automotive Safety Foundation, The President's Committee for Highway Safety and the National Safety Council.

The ability of the Public Health Service to make major contributions to safety through research is widely recognized and, in our view, is an appropriate activity of the Federal Government.

We are, however, disturbed by the breadth of the proposals set forth in H.R. 133, particularly with reference to their potential impact on the National Safety Council with which we are closely affiliated. A program on a relatively modest scale such as that proposed in subsections (1) through (4) of section 382 of the bill is, we believe, an appropriate Federal project. Most of the remainder of the proposals we believe are not appropriate because they would be certain to infringe on the activities of the many private organizations which are contributing so greatly to safety through public education and otherwise.

It is our firm conviction that, except as to research contributions and enforcement where clearly in the public interest, safety activities should be carried on under private auspices and by government at the State and local levels and not by means of a substantial expansion of the Federal Government.

This is particularly important with respect to the highly probable impact of these broad proposals on the activities of the National Safety Council. The council, now in its 50th year, performs with outstanding success many of the same functions encompassed in H.R. 133, pursuant to its charter, granted by the Congress under Public Law 83–259.

The National Safety Council operates in every phase of the safety field. It receives the benefit of financial support as well as the serious personal efforts of representatives of every segment of the public, industry, and government including several Federal agencies. In addition to the impact of H.R. 133 on the actual operations of the council, the proposal in section 383(b) poses a threat to the financial support which is essential to those operations.

We respectfully urge, therefore, that any measure which may be enacted in this field be sufficiently restricted to prevent encroachment upon the activities

or support of the National Safety Council, its affiliated State and local safety councils, and the numerous other outstanding private safety and related organizations.

We shall very much appreciate it if this communication is incorporated in the record of the hearings on H.R. 133.

Cordially yours,

JAMES D. MANN, *Secretary-Manager.*

ST. PETERSBURG, FLA., *April 1, 1963.*

Hon. PAUL G. ROGERS,
Member of Congress,
House of Representatives, Washington, D.C.

DEAR SIR: Having been a founder member of the American Association for Automotive Medicine and the past president of the association, I have more than the usual knowledge of automobile safety and the problems connected to it. You are currently on the committee considering bill H.R. 133, known as the Roberts bill, to provide a national institute for the studying of all aspects of automobile safety and licensing procedures.

I would first of all like to strongly urge that you support this bill and its passage and secondly that you give serious consideration to putting it in St. Petersburg. I was instrumental in getting the public health department to start a research program in St. Petersburg, this year, for the study of accidents in older people. This, of course, is not only pertaining to automobiles but also accidents in general. Dr. Lawton, who is currently heading it, has a large amount of knowledge on the entire subject of automobile safety and would probably head the new division, if the bill is passed. I think that the facilities here, with the possibility of purchasing the American Legion Hospital would provide him plenty of room. They are already getting a considerable amount of expensive and elaborate equipment for testing and this could be easily amplified. In addition, we have near at hand, Sebring with its annual race which provides an opportunity of studying large numbers of cars at speed. We are quite close to Daytona, with all of its testing possibilities for automobiles in any phase as well as its numerous races. I must point out that the current use of seat belts originated from racing.

Please let me know if there are any questions that I could answer for you or if there are any further thoughts that I might help you with.

Yours very truly,

PAUL F. WALLACE, M.D.

(Whereupon, at 11:30 a.m., the hearing, in the above-entitled matter, was recessed, subject to call.)

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