

*Automobile Collision Data: An Assessment
of Needs and Methods of Acquisition*

February 1975

NTIS order #PB-244867

OFFICE OF TECHNOLOGY ASSESSMENT

Automobile Collision Data

AN ASSESSMENT OF NEEDS
AND METHODS OF ACQUISITION

FEBRUARY 17, 1975

PREPARED AT THE REQUEST OF
THE HOUSE COMMITTEE ON APPROPRIATIONS
TRANSPORTATION SUBCOMMITTEE

PREPARED UNDER CONTRACT OTA C11 BY
ECONOMICS & SCIENCE PLANNING, INC.
1200 18TH STREET N.W.
WASHINGTON, D. C. 20036

TECHNOLOGY ASSESSMENT BOARD

OLIN E. TEAGUE, TEXAS, CHAIRMAN
CLIFFORD P. CASE, N.J., VICE CHAIR MAN

EDWARD M. KENNEDY, MASS. MORRIS K. UDALL, ARIZ.
ERNEST F. HOLLINGS, S.C. GEORGE E. BROWN, JR., CALIF.
HUBERT H. HUMPHREY, MINN. CHARLES A. MOSHER, OHIO
RICHARD S. SCHWEKER, PA. MARVIN L. ESCH, MICH.
TED STEVENS, ALASKA MARJORIE S. HOLT, MD.
EMILIO Q. DA DADDARIO

Congress of the United States

OFFICE OF TECHNOLOGY ASSESSMENT
WASHINGTON, D.C. 20510

EMILIO Q. DADDARIO
DIRECTOR

DANIEL V. De SIMONE
DEPUTY DIRECTOR

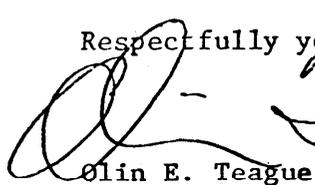
The Honorable George H. Mahon
Chairman
Committee on Appropriations
U. S. House of Representatives"
Washington, D. C. 20515 .

Dear Mr. Chairman:

On behalf of the Board of The Office of Technology Assessment, we are pleased to forward to you the following report on Automobile Collision Data. This study was requested as an evaluation of the automotive crash recorder program proposed by the National Highway Traffic Safety Administration (NHTSA). As the assessment progressed, the implications for automobile collision data as a "whole became apparent and the report has been so titled to provide a more accurate indication of its scope.

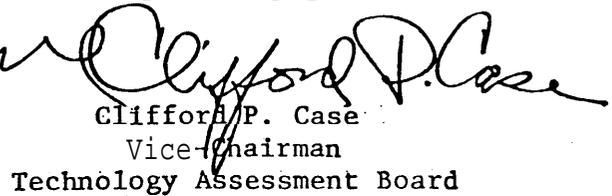
This report is being made available to your Committee in accordance with Public Law 92-484.

Respectfully yours,



Olin E. Teague
Chairman
Technology Assessment Board

Respectfully yours,



Clifford P. Case
Vice-Chairman
Technology Assessment Board

PREFACE

Highlights of the study findings which are especially relevant to the four questions posed by the House Appropriations Committee in its letter of request are summarized below. (The Committee letter is appended).

1. Cost and Adequacy of Current NHTSA Programs

The National Highway Traffic Safety Administration has spent a total of \$15.8 million during the last three years gathering and analyzing automobile crash data. The data collected by NHTSA is inadequate to provide a basis for effective safety standard setting or measurement of the benefits of the standards in force. The inadequacies of the system are: too few reports are gathered too slowly; the file is biased toward severe injury accidents; reports do not include adequate quantitative measures of causal severity; and, the information recorded in accident reports is not that which is essential to answering the specific questions of rulemakers, accident researchers and car designers.

2. Use of Existing Crash Recorders

There are 1800 installed (disk-type) crash recorders. These provide a 3-axis acceleration time history over the actual impact interval. This information would probably be adequate to determine crash severity had a severity index been explicitly defined. After the index is defined, these same recorders might be used as part of a specialized crash severity research program.

Currently these recorders provide a limited independent measure of crash severity in air-bag equipped cars. They are also giving NHTSA practical experience in the retrieval, readout and analysis of crash records, the reliability of recorders themselves, and the reactions of fleet owners to crash recorder installations.

3* Improving the Data Base

NHTSA has not provided a sampling plan to support requested appropriations for crash data acquisition programs in the last three years. In order to rectify the inadequacies of the existing data base and the current crash data acquisition system, a comprehensive sampling plan must be developed.

The rate of acquisition of collision reports should be increased to 500,000 to 1,000,000 per year at an estimated cost of \$3-10 million annually. Causal severity should be measured and reported. This could be done by using disk recorders at a cost per report of about \$133. Alternately, vehicle deformation could be measured and analyzed to determine severity at a cost of about \$20 per report. However, if a cheap crash severity measuring device could be developed, it would eliminate the tedious measurement and analysis of vehicle deformation.

The consequences of not getting data are, first, sustaining a continuing societal loss of at least \$22 billion per year in automobile death, injury and damage without developing adequate tools to correct the problem; and second, imposition of \$7 billion to \$14 billion in consumer costs for meeting existing, proposed, and planned future motor vehicle safety standards whose benefits will continue to be uncertain.

Current NHTSA programs (multidisciplinary accident investigation, air cushion restraint system evaluation, fatal accident reporting, pedestrian-cyclist accident survey) should be continued. They are necessary to answer specific safety questions. . . . _

4. Further Considerations

If sophisticated tape crash recorders were used, there may be secondary benefits to driver training programs. For example driver errors may be more readily determined and the effectiveness of driver training may be better measured.

If crash recorders are installed, there is the possibility that their readings could be used in liability cases. This matter should be examined more fully in the legislative process.

MAJORITY MEMBERS
GEORGE H. MAHON, TEX.,
CHAIRMAN

JAMIEL WHITTON, MISS.
JOHN J. ROONEY, N.Y.
ROBERT L. F. SIKES, FLA.
OTTO C. PASSMAN, LA.
JOE L. EVINS, TENN.
EDWARD POLAND, MASS.
WILLIAM H. HATCHER, NV.
DANIEL J. FLOOD, PA.
TOM STEED, OKLA.
GEORGE E. SHIPLEY, ILL.
JOHN M. SUCK, W. VA.
JOHN J. FLYNT, JR., GA.
NEAL SMITH, IOWA
ROBERT N. GIAMMO, CONN.
JULIA BUTLER ANSEN, WASH.
JOSEPH P. ADDABO, N.Y.
JOHN J. Mc FALL, CALIF.
EDWARD J. PATTE, N.C.
CLARENCE O. LONG, MD.
SIDNEY R. YATES, ILL.
HOB CASEY, TEX.
FRANK E. EVANS, COLO.
DAVID R. OUEY, WIS.
EDWARD R. HOYDAL, CALIF.
LOUIS STOKES, OHIO
J. EDWARD TROUSH, INO.
K. GUINN MC KAY, UTAH
TOMMYVILLE, ALA.
EDITH GREEN, ORIG.
ROBERT O. TIERNAN, R.I.
BILL CHAFFEL, JR., FLA.
BILL D. HURLISON, MO.

Congress of the United States
House of Representatives
Committee on Appropriations
Washington, D.C. 20515

November 19, 1974

M.H. - 11/19/74
ELFORD A. GIDE, RBE, PO, MICH.
WILLIAM C. MINNHALLO, OHIO
ROBERT H. MICHE, ILL.
911 VIO O. CONTE, MARG.
OLUFIN 44. DAVIS, WIS.
HOWARD W. ROBINSON, A. V.
GARDNER, SHUNGER, KANS.
JOSEPH M. MCDADE, O.A.
MARK ANDREWS, N. DAK.
LOUIS C. WYMAN, N.H.
BUNT L. TALCOIT, CALIF.
WINDFELL WYATT, OREG.
JACK EDWARDS, ALA.
WILLIAM J. SCHIRLE, IOWA
FR. EDURT C. MC WYN, N.Y.
JOHN T. MAYERS, INO.
J. KENNETH THOMPSON, VA.
CLARENCE F. MILLER, O. IO
EARL D. RUTH, N.C.
VICTOR V. VEYSEY, CALIF.
LA. WRENCE COUGHLIN, PA.
C. W. DILL YOUNG, FLA.

CLC HR. NO. STAF V 011, ROOM
K-11 THF. MAINLAND

TELEPHONE:
CAPITOL 4-3121
FAX, 32771
OR
225-2778

Honorable Edward M. Kennedy
Chairman
Technology Assessment Board
Washington, D. C. 20510

Dear Mr. Chairman:

On behalf of Congressman John J. McFall, Chairman of the Transportation Subcommittee, and Congressman Silvio O. Conte, the Subcommittee's Ranking Minority Member, I am transmitting the attached request for a technology assessment with regard to automobile crash recorders.

with kindest personal regards.

Sincerely,

George H. Mahon
Chairman

GEORGE H. MAHON, TEXAS
CHAIRMAN

JAMES H. WHITE, MISS.
JOHN J. BOONEY, N.Y.
ROBERT L. F. SIKES, FLA.
OTTO E. PASSMAN, LA.
JOE L. EVINS, TENN.
EDWARD P. BOLAND, MASS.
WILLIAM H. RATCHER, KY.
DANIEL J. FLOOD, PA.
TOM STEFEL, OKLA.
GEORGE E. SHIPLEY, D.C.
JOHN M. SLACK, VA.
JOHN J. FLYNT, JR., OHIO
NEALS SMITH, IOWA
ROBERT N. GIAMMO, CONN.
JULIA BUTLERHANSEN, WASH.
JOSEPH P. ADAMO, N.Y.
JOHN J. MC FALL, CALIF.
EDWARD J. PATTEN, N.J.
CLARENCE D. LONG, MO.
SIDNEY P. YATES, ILL.
BORRIS CASEY, TEX.
FRANK C. EVANS, COLO.
DAVID H. OBEY, WIS.
EDWARD R. ROYBAL, CALIF.
LOUIS STOKES, OHIO
J. EDWARD ROUSH, IND.
U. GUNN MC KAY, UTAH
TOM BEVILL, ALA.
EDITH GREEN, OREG.
ROBERT O. TIERNAN, R.I.
BILL CHAPPELL, JR., FLA.
BILL D. BURLISON, MO.

Congress of the United States
House of Representatives
Committee on Appropriations
Washington, D.C. 20515

November 19, 1974

MINORITY MEMBERS
ELFORD A. GREENBERG, MICH.
WILLIAM E. MINGSHALL, OHIO
ROBERT H. MICHEL, ILL.
SILVIO O. COITE, MASS.
GLENN R. DAVIS, WIS.
HOWARD W. ROBINSON, N.Y.
GARNER E. SMITH, KANS.
JOSEPH M. MCCARTY, PA.
MARK ANDERSON, N. DAK.
LEWIS C. WYMAN, N.H.
BURT L. TALCOTT, CALIF.
WENDELL WYATT, OREG.
JACK EDWARDS, ALA.
WILLIAM J. SCHERER, IOWA
ROBERT C. MC EWEEN, N.Y.
JOHN T. MYERS, IND.
J. KENNETH ROBINSON, VA.
CLARENCE E. MILLER, OHIO
EARL B. RUTH, N.C.
VICTOR V. VEYSEY, CALIF.
LAWRENCE COUGHLIN, PA.
C. W. BILL YOUNG, FLA.

CLERK AND ST. DIRECTOR
KATH F. MAINLAND

TELEPHONE:
CAPITOL 4-3121
EXT. 52771
OR
222-2771

Honorable George H. Mahon
Chairman
Committee on Appropriations
U.S. House of Representatives
Washington, D. C.

Dear Mr. Chairman:

The Conference Report to H.R. 15405 (Department of Transportation and Related Agencies Appropriations Bill, 1975) states that: "The conference agreement contains no funds for the crash recorder program. The Committee intends to request an evaluation of this program by the Office of Technology Assessment. "

The purpose of this program, as proposed by the National Highway Traffic Safety Administration (NHTSA), is to assemble detailed data on actual collisions so as to develop realistic automobile design standards. NHTSA proposed the installation of 100,000 crash recorders in vehicles used in ordinary driving. Total cost of the 5 year program including installation of the recorders and monitoring and analysis of the data was estimated at \$14.5 million in 1973. An alternate approach has also been proposed by NHTSA. This entails the controlled crashing of unoccupied vehicles along with computer simulations of automobile crashes. The cost of this program has been estimated as approximately the same as the crash recorder program.

Although the committees of both Houses have heard extensive testimony on this program over the past three years, substantial questions and differences still exist on the necessity for gathering additional information through the installation and monitoring of the requested crash recorders.

Since this issue remains unresolved, the Conference Committee on H.R. 15405 decided to call upon the Office of Technology Assessment for assistance.

We therefore request that the Technology Assessment Board consider approving an assessment that would address the following issues:

1. How much has NHTSA spent in each of the past three years to gather accident data? Is that data sufficient, or is further data on the characteristics of automobile collisions necessary for effective NHTSA standards-setting? If the existing data base is inadequate; in what ways is it inadequate?
2. An evaluation of the type of data being produced by existing crash recorders and an explanation of how this data is being used by NHTSA should be conducted.
3. If the data base is inadequated, how might an adequate data base be obtained and what are the consequences associated with obtaining the data in different ways (including the possibility of not obtaining the necessary data)? The cost effectiveness of the crash recorder and the crash impact approaches proposed by NHTSA should be examined.
4. Secondary consequences of implementing these or other program should be identified and evaluated. Examples of these secondary consequences include legal questions associated with the existence of actual physical data from an accident and the potential value (to driver training program) of a knowledge base concerning how drivers actually respond in accident situations. For each type of approach investigated, the implementation costs to the Federal Government, industry and consumers should be identified.

We appreciate your assistance in transmitting this request to the Chairman of the Technology Assessment Board.

Sincerely,

(signed)

(signed)

John J. McFall
Chairman, Subcommittee on
Transportation Appropriations

Silvio O. Conte
Ranking Minority Member
Subcommittee on Transportation
Appropriations