FIRST NATIONAL FORUM ON TRAFFIC RECORDS SYSTEMS

NOVEMBER 12-14, 1974
FORUM PROCEEDINGS

NATIONAL FORUM ON TRAFFIC RECORDS SYSTEMS

November 12-14, 1974
New Orleans, Louisiana

Sponsored by
National Safety Council

Conducted by
Traffic Records Committee
National Safety Council

In Cooperation With
American Association of Motor Vehicle Administrators

National Conference of Governors
Highway Safety Representatives

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# TABLE OF CONTENTS

## FORUM PROGRAM PLANNERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Dewey Jordan</td>
<td>11</td>
</tr>
</tbody>
</table>

## INTRODUCTIONS

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. James B. Gregory</td>
<td>3</td>
</tr>
</tbody>
</table>

## FORUM ADDRESS

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Dewey Jordan</td>
<td>1</td>
</tr>
</tbody>
</table>

## FORUM PANEL DISCUSSIONS

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vincent L. Tofany</td>
<td>11</td>
</tr>
<tr>
<td>Noel C. Bufe</td>
<td>13</td>
</tr>
<tr>
<td>William N. Carey, Jr.</td>
<td>16</td>
</tr>
<tr>
<td>Richard E. McLaughlin</td>
<td>20</td>
</tr>
</tbody>
</table>

## SPECIAL TRAFFIC RECORDS REPORTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elbert Hugunin</td>
<td>25</td>
</tr>
<tr>
<td>David M. Baldwin</td>
<td>26</td>
</tr>
<tr>
<td>Marie D. Eldridge</td>
<td>26</td>
</tr>
<tr>
<td>A. Dewey Jordan</td>
<td>31</td>
</tr>
<tr>
<td>Jack H. Leverenz</td>
<td>35</td>
</tr>
<tr>
<td>Ralph J. Haller</td>
<td>40</td>
</tr>
</tbody>
</table>

## TRAFFIC RECORDS SYSTEMS PROGRAM ADMINISTRATION AND MANAGEMENT

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Records System Transferability</td>
<td>47</td>
</tr>
<tr>
<td>Pat Ehrlich</td>
<td></td>
</tr>
<tr>
<td>Accident Information System</td>
<td>58</td>
</tr>
<tr>
<td>Ronald Marshak</td>
<td></td>
</tr>
<tr>
<td>Administration of State and Local Traffic Records Systems</td>
<td>66</td>
</tr>
<tr>
<td>Samuel J. Mayo</td>
<td></td>
</tr>
<tr>
<td>A Statewide and Successful Integrated Traffic Records System</td>
<td>74</td>
</tr>
<tr>
<td>Bob Smith</td>
<td></td>
</tr>
</tbody>
</table>

## TRAFFIC RECORDS USES

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Uses and Accident Records</td>
<td>85</td>
</tr>
<tr>
<td>B. J. Campbell</td>
<td></td>
</tr>
<tr>
<td>The Highway Loss Data Institute</td>
<td>87</td>
</tr>
<tr>
<td>Brian O'Neill</td>
<td></td>
</tr>
<tr>
<td>Traffic Records for Annual Work Plans</td>
<td>97</td>
</tr>
<tr>
<td>Jimmy N. Harper</td>
<td></td>
</tr>
<tr>
<td>A Systems Approach</td>
<td>108</td>
</tr>
<tr>
<td>Sam E. Luebbert</td>
<td></td>
</tr>
</tbody>
</table>
DATA ANALYSIS

Research Uses

James O'Day .................................................. 118

Program Evaluation in Motor Vehicle Departments

Ronald S. Coppin ........................................ 121

A System to Identify Causative Factors of Traffic Accidents

Frederick M. Cody ........................................ 128

Traffic Records and Their Role in Selective Enforcement

Charles W. Young, Sr. ..................................... 131

INTERGOVERNMENTAL AND INTERSTATE DATA EXCHANGE

ANSI D20 Progress Report

Basil Y. Scott .............................................. 137

ANSI D20.9 Status Report

Sam Mills ...................................................... 145

National Driver Register

Brian Connell ............................................... 150

National Crime Information Center

Frank Buell ..................................................... 157

National Law Enforcement Telecommunications System

C. J. Beddome .................................................. 158
The Traffic Records Committee of the National Safety Council is pleased to present the first National Forum on Traffic Records Systems. We are proud to have the assistance in this endeavor of the American Association of Motor Vehicle Administrators, the Transportation Research Boards Traffic Records Committee, and the Governors Highway Safety Representatives.

The objective of the Forum is to bring together working professionals in the development and use of traffic records systems for the purpose of hearing presentations and exchanging information. Our Forum will include such subjects as:

- The Administration and management of traffic records systems
- Data analysis reports
- Uses and Users of traffic records systems
- Intergovernmental and interstate data exchange
- Special reports of Traffic Records Committees and National organizations

We are not strangers to one another and certainly the topics which we will address here are not new to you. What is new is that we have brought together our several organizations to deal with these problems in a manner which will enable us to share our findings and achieve a unified approach.

And now I would like to introduce Mr. Bill Franey, Deputy Executive Director of the American Association of Motor Vehicle Administrators, who will be presiding for the morning session.
William H. Franey, Assistant Executive Director of the American Association of Motor Vehicle Administrators, presided for the introductions, welcome, forum address and traffic records systems special reports.

Wilma Lockhart, Executive Director of the Louisiana Highway Safety Commission, welcomed the participants to the State of Louisiana and the City of New Orleans.
FORUM ADDRESS

Dr. James B. Gregory, Administrator
National Highway Traffic Safety Administration

THE IMPACT OF TRAFFIC RECORDS SYSTEMS

I appreciate being asked to open the first National Forum on Traffic Records Systems, sponsored by the Traffic Records Committee of the National Safety Council. As I look around this room I see many familiar faces associated with the American Association of Motor Vehicle Administrators, the Governors Highway Safety Representatives, the Transportation Research Board, some key legislators, plus others including appropriate staff members of the National Highway Traffic Safety Administration. I would say that I am in good company and the topic to be taken up in this Forum is both timely and vital from a number of aspects. I only wish I shared the level of technical expertise and experience evidenced by this assembly. One thing I do share, at least at times: the frustration of needing vital data which is not easily available by which to get my job done.

A good traffic records system is not only a bottom-line item; It's the bottom line. Quoting from our highway safety program manual:

"The purpose of Traffic Records is to assure that appropriate data on drivers, motor vehicles, highways, and motor vehicle traffic accidents is gathered, entered into the system in such a manner that it is retrievable, and is used for analysis in planning, management and evaluation of highway safety programs to further the goals of crash, injury and death reduction."

Looking at it another way, traffic records should tell us where we are and point the optimum path to our goals; thus they have a planning function. They should generate and move programs; so they have an operations function. And they should tell us whether or not we have reached our destination and, if not, by how much; therefore, they have an evaluation function.
It is our policy to support the development within each State of a traffic records system that meets State and local government needs for planning, operation, and management of highway traffic safety programs. The actual design and implementation of the records system are performed by the individual State or its political subdivisions.

However, we do encourage and want to work with you toward effective data standardization at the local, State, and national level. In 1973, the National Highway Traffic Safety Administration (NHTSA) published a Design Manual for State Traffic Records Systems which was created in response to the need for, and significant benefits to be derived from, improved standardization. Most importantly, the Manual outlines the data content to support the development and implementation of highway traffic safety programs. All aspects of the development of an integrated statewide traffic records system are addressed in the Manual, including systems development, data needs of individual State and local government organizations, information exchange, and recommended data analysis and identification of safety problems and solutions.

As new concepts in the organization and employment of traffic records data are developed, or present ideas are modified, NHTSA plans to update the Design Manual to reflect these developments. As additional recognized national data standards are developed, the Manual will be revised to accommodate these changes.

Two American National Standards Institute active committees will impact future changes in the Manual. These are D16.1 Manual on Classification of Motor Vehicle Traffic Accidents, sponsored by the National Safety Council; and D20 States' Model Motorist Data Base, sponsored by the American Association of Motor Vehicle Administrators.

Traffic records are critical to the success of all aspects of traffic safety. Their effectiveness depends to a large degree on the quality and use of the traffic records systems by States and communities. Some of the many support functions they provide are:
- Statewide traffic safety programs management through traffic records data analysis, problem identification, and program planning, management and evaluation.
- Identification of problem drivers for corrective action by administration and enforcement officials. This is especially significant for the identification of problem drinking drivers.
- Rapid identification of drivers whose licenses have been denied or withdrawn as an aid to licensing control programs and enforcement, administration, and judicial actions.
- Provide readily available data on driver convictions, suspensions, and previous license restrictions for traffic court judges prior to sentencing or referral to driver improvement programs.
- Identification of high-accident or potential high-accident locations for corrective action by highway engineering agencies.
- Identification of high-accident or potential high-accident locations for Selective Traffic Enforcement Programs.
- Analysis of traffic arrest and accident locations so police administrators can make effective and intelligent use of their manpower and facilities.

Most records systems in States and communities were originally created out of vital operational needs rather than strictly the needs of highway safety. Operational programs may have little direct safety benefit, but they do have the potential for a tremendous indirect impact on safety. State traffic records designed for operational programs are often geared to a case-by-case storage and retrieval which meets the general needs of driver licensing, vehicle registration and traffic law enforcement, and, therefore, are not necessarily suited to analyze the entire highway safety situation for problem identification.

Realizing that State files were built to satisfy operational needs, we know that:

1. Many separate systems have often been built within individual States.
2. Each of these systems costs a good deal to operate and maintain. This results in duplicated data being maintained along with duplicated costs.

3. Exchanges attempted between most systems within a given State are usually difficult, costly, and usually not timely.

We also have to say that a lot of money has gone into the upgrading of the States' systems. Now is the time to redirect some of the current efforts and expenditures to achieve the improvements that we all know are needed and which should result from the monies spent.

In the area of file usage, the National Highway Traffic Safety Administration, through our Office of Statistics and Analysis, is working in three major areas of data collection.

The first of these is the Fatal Accident Reporting Systems (FARS), which is a redesign and upgrading of the Fatality Analysis File. The FARS has information on all fatal accidents. It is obtained from the State accident report forms, highway departments, vehicle registration files, driver licensing files and the State vital statistics files.

The second area is that of Multidisciplinary Accident Investigation (MDAI). The data are collected by MDAI Teams that make scientific, in-depth studies of specific accidents. These teams are composed of a mix of trained professionals, so that the data collected are both reliable and complete. In the future, the accidents to be investigated will be selected according to a National Sampling Strategy and will thus be representative of the National Accident Environment.

The third area is the National Accident Reporting System (NARS). The NARS will be composed of a sample of all non-fatal accidents and will be representative of the National Accident Environment. It will be obtained in much the same fashion as the data for the FARS, and will contain similar information.

We are also in the final stages of a feasibility study on a National Center for Statistical Analysis of Highway Operations. The National
Center would be responsible for acquiring, standardizing, retrieving, and producing reports and analysis of accident and other related data.

The management of a comprehensive and effective national highway traffic safety program requires the acquisition and analysis of data related to all important aspects of motor vehicle transportation system at all levels.

Although numerous files have been established to attempt to satisfy specific, individual needs, I think it is fair to say that no system exists to coordinate, compile, analyze and distill the needed data into useful information or to avoid duplication of effort and the proliferation of unusable files. It has become apparent that a total systems approach is needed to bring together data requirements contained in the various reporting systems previously established.

In response to the needs described, a computerized Traffic Safety Programs/Management Information System (TSP/MIS) is being developed which will be responsive to all levels of program management concerned with state and community highway safety programs.

Currently an analysis of the existing Federal and State traffic safety reporting requirements is being undertaken. From this effort, development of a data dictionary and design of a comprehensive system to meet the needs of the Office of Traffic Safety Programs will follow. In addition, the existing Program Information Reporting System will be implemented as the first component of the MIS. Once this component is installed, we will begin working on the other systems components which consist of the Annual Work Program, the Comprehensive Plan, legislative status, and program analysis and evaluation.

Many of the areas I have briefly gone into this morning will be expanded upon by subsequent Forum participants, including your Chairman, Dewey Jordan, and Marie Eldridge of NHTSA, as well as by the participants in the panel discussion which immediately follows these remarks.
I also want to mention that one other NHTSA member on your Forum program is Brian Connell, Chief of the National Driver Register. The NDR is set up to help you achieve bottom line results, too. I urge you to contribute to it, and to use it.

I want to touch on another matter which is very recent in development, so much so that we are currently assessing its impact, both short and long range.

As you know, the Congress recently passed, and President Ford on October 27 signed into law a bill which contains some significant changes in the National Traffic and Motor Vehicle Safety Act of 1966. One of these changes will require manufacturers to identify and notify, whenever a safety defect is determined to exist, not merely those owners known to the manufacturer through warranty registration, but every owner registered in any State as the owner of any vehicle containing the defect. This new law will require the recall of those vehicles and it will require the manufacturer to correct the defect free of cost to the owner.

This single change thrusts upon each State's record-keeping facility a new role. Each State will be called upon to furnish from manufacturer defect/vehicle identification number listings a matched list of drivers who own those vehicles. No other up-to-date source of such information exists.

This expanded, recall-and-remedy provision is significant, and its success will hinge upon the accuracy, adequacy, and efficiency of the record-keeping program in each State.

I have one other comment before I close. We as a society have shown we can impact the bottom line favorably. Not only are injury and fatality rates going down, but so are the actual year-to-year month-to-month numbers. The national 55 mph speed concept is saving fuel and it is saving lives. This effort plus our continuing specific safety programs which are paying off in terms of better drivers, a better driving environment, and safer cars add up to today's improved bottom line.
If we are to communicate with each other sensibly and rapidly in the future about this bottom line and the changes in it we are all working for we need the common and consistent language we're all here to talk about.

Thank you.
PANEL DISCUSSIONS

Each organization involved in conducting the National Forum on Traffic Records Systems was represented on a panel to respond to Dr. Gregory's forum address and to question him regarding aspects of the National Highway Traffic Safety Administration's traffic records program.

Fortunately, the chief administrator of each organization participated in the panel discussions, including:

Vincent L. Tofany, President
National Safety Council

William N. Carey, Jr., Executive Director
Transportation Research Board

Noel C. Bufe, Past Chairman
National Conference of Governors
Highway Safety Representatives

Richard E. McLaughlin, President
American Association of
Motor Vehicle Administrators
PANEL DISCUSSIONS

Vincent L. Tofany, President
National Safety Council

The National Safety Council is delighted to sponsor the first National Forum on Traffic Records Systems. I am pleased to welcome members of the American Association of Motor Vehicle Administrators, Transportation Research Board, National Conference of Governors Highway Safety Representatives and our Traffic Records Committee. Also, we are glad to see so many of you from allied fields in attendance. And to the officers of the Traffic Records Committee, I extend every best wish for a productive forum and hope you can conduct an international forum in a year or so.

Jim, we're delighted you're here with your NHTSA message on the importance of traffic records systems. You're at a gathering of principal traffic records administrators in which four organizations have joined in a mutual effort; namely, AAMVA, TRB, Governors' Reps and NSC. And we're all joined with NHTSA to further the highway safety program standards with especial emphasis on Standard 10, Traffic Records.

We concur with your statement of the purpose of traffic records and join you in urging data standardization. We're involved in the data standardization represented by ANSI Standards D16.1 and D20. Committee members Barbara Carraro and Elbert Hugunin are involved in this important work. We also see the need for a fresh look at and redirection of the purposes of traffic records systems. Yes, data must be used for operational purposes, but they have the potential for more impact when used for overall traffic safety benefits. Use them for improved driver licensing, but relate such driver data to the vehicle, highway and accident for improved driving through driver education, public information and citizen support. We need to see better organization of the traffic records system, a more effective Traffic Records Committee and the utilization of the best traffic records coordinator possible.
We have been urging better data and better data use for a long time in traffic records. As early as 1914, members of the National Safety Council's Public Safety Section were interested in developing standard accident data forms for state and city use. Record committees developed data reporting and summary forms for public accidents, including motor vehicle, non-motor vehicle, elevator, buildings and general public accidents.

For motor vehicle accidents, standard police and driver accident report forms were developed in 1922 and widely distributed by the National Safety Council. Also, in 1924, summary forms for recording motor vehicle traffic accident experiences were developed and distributed by the Council. In 1925, New York State prepared the first summary of motor vehicle accident experiences on the standard form. Also, 38 cities were preparing such summary forms. This initial activity was reported on in detail at the 14th National Safety Congress in Cleveland, Ohio, in 1925.

From the voluntarily developed and submitted data - on a standard form developed by committee members and distributed by the Council - we received data that made possible our annual publication, ACCIDENT FACTS. Barbara Carraro and her staff could not develop motor vehicle data without these data forms that most of you use.

Over the years, committee members developed traffic safety memos for state and city traffic accident records administrators dealing with spot maps, location files, selective enforcement, traffic engineering, bicycle accidents, public information, accident classification and others. As most of you know, the memo on the classification of motor vehicle accidents has become a national standard with the Council as secretariat. Many of you have been involved in revision work on this standard. You'll hear more about this during the forum.

Our committee members worked with the former Traffic Accident Data Project to develop the widely used Vehicle Damage Scale and such publications as the Manual on Classification of Motor Vehicle Traffic
Accidents, Guide to Classification, Exercises in Classification and others. Several of these Council publications are on display in the ballroom lobby at the Council's Highway Safety Program Services Department booth manned by Harold Holmes and Larry Hoffman.

Many of our committee members were involved in the development of Volume 10, Traffic Records, of the Highway Safety Program Manual. And, when it was published and distributed, several committee members worked with our Traffic Department staff -- Larry Hoffman, Elbert Hugumun, and others -- to develop our successful traffic records systems course which has been presented, on a contractual basis, in several states such as Idaho, Virginia, Indiana, Texas and others. Information on this and other courses is available at the HSPS booth in the lobby.

The Council and its committee members will continue to be active in the traffic records field. We expect to sponsor, and the committee to conduct, more forums of this type because of the urgent need to exchange information between principal traffic records systems administrators and the need to redirect the use of traffic records data for more impact when used for overall traffic safety benefits.

Dr. Noel C. Bufe
Past Chairman
National Conference of Governors' Highway Safety Representatives

The National Conference of Governors' Highway Safety Representatives is indeed appreciative of the opportunity to have participated in the planning and implementation of this first National Forum on Traffic Records Systems. In that regard our Conference owes a special debt of gratitude to Mr. Brooks Griffith, Governor's Highway Safety Representative from Arkansas, who acted as our liaison with the planning committee in the design of the forum's program.

In addition, it is my pleasure to recognize some of our other notable Conference members whom I hope you will have the opportunity to meet during our deliberations. I would first like to introduce Mr. Carlton Fisher, Governor's Highway Safety Representative from Georgia, who now
is the Chairman of the National Conference of Governors' Highway Safety Representatives. In addition, we are privileged to have with us our Conference Vice Chairman, Mr. Robert Simpson from the State of Alabama, and Pat Ehrlich, Secretary, from the State of Idaho.

As we consider the pressing subject matter that we have before us, I think the record of the immediate past is clear. Since the passage of the Highway Safety Act of 1966, states have made considerable investment, commitment and progress in the enhancement of statewide traffic records systems throughout the country. It has been my experience during the past couple years to observe how little is known about state traffic records systems by those who do not work directly with them. It is therefore only appropriate that we examine the traffic records system as it exists today in each of our states as a beginning point for our deliberations to strengthen what we already have.

This record of progress should demonstrate to any skeptic that the Governors' Highway Safety Representatives recognize the significance of this component of the highway safety system to the overall scheme of things in our contemporary highway safety movement. We have not been sitting idly by for the past seven or eight years ignoring the need for upgrading the traffic records problems in various states. Much to the contrary, as Wilma Lockhart has already indicated, most states have addressed this problem area with considerable emphasis.

Dr. Gregory's remarks that dealt with a description of the nation's traffic records systems operated by the states were particularly germane to our conception of where do we go from here. As he stated, focus at the state and local level has been, for the most part, on the development and implementation of increased operating capability of the various traffic records subsystems. This was a very obvious and important first step in the upgrading process, and we believe this approach was necessary to enlist the cooperation of these subsystem traffic records managers since operational gains were of utmost importance to them, at least initially. Use of these more sophisticated operational
subsystems is providing traffic safety practitioners with services which I am sure would not have been developed as expeditiously were it not for the Highway Safety Act and the various state highway safety programs.

We cannot, on the other hand, be satisfied with the present state of affairs, for we know too well that much remains to be done to make the traffic records subsystems serve more productively as a management tool for decision makers at all governmental and other user levels. The fact remains even after several years of accelerated traffic records systems implementation that the problem-solving process just cannot function well enough to serve highway safety planners until data are available from which decision making can take place with precision. This can only occur when all necessary data is available for this important analytical processing.

Our Conference is anxious to see progress in a couple areas soon. Data that characterizes traffic accidents must be integrated with environmental information, then processes must be made available for correlating both these sources of information. Criteria which measure the effect that certain traffic accident countermeasure programs produce in impacting the crash problem must be identified and also integrated into the traffic records systems. It is obvious to Governors' Highway Safety Representatives that the major challenge that faces us both in the immediate and long range future has to do with using available information more productively.

In the next few years it is going to be more difficult to demonstrate as much progress as we have experienced in the immediate past. However, we feel the progress that we do make in the future will indeed be more exciting for it will begin to be answer oriented. I hope we are agreed that this is the ultimate purpose of traffic records systems.

Another principle concern we have while moving ahead in the implementation of statewide traffic records systems is to insure that we do these great things without the expense of duplication of effort by states all working unilaterally on developmental matters that could be shared. We
all have a responsibility to avoid this time-consuming mismanagement practice that all too often has characterized traffic safety management in the past. The National Conference of Governors' Highway Safety Representatives stands ready to cooperate in this movement and commend all who are here, as we interpret your presence to mean to us a devotion to this important cause and we are indeed appreciative. We sincerely hope that this is not the last opportunity we have to meet on this matter, and we look forward to subsequent gatherings when matters concerning our mutual welfare can be explored and perhaps new avenues of remedy identified and pursued for the future good of our highway users.

I thank you kindly for this opportunity to share in this important forum and want to extend to you the invitation to be in touch with your respective Governors' Highway Safety Representatives throughout the country, as I see their involvement in the traffic safety movement to be very paramount to the future of this important component of the highway safety system.

Thank you.

William N. Casey, Jr.
Executive Director
Transportation Research Board

It is a pleasure for me to extend to you the best wishes of the Transportation Research Board, as one of the cooperating agencies of this Forum, for a most successful program on a vitally important and timely subject - traffic records systems.

I have been impressed with the close working relationship which exists between the sponsoring and cooperating groups. Dewey Jordan, Chairman of NSC's Committee on Traffic Records also serves on the TRB Traffic Records Committee. Likewise, Dave Baldwin, Chairman of our Committee on Traffic Records also serves on the NSC Committee. Both committees enjoy the active participation of members of the American Association of Motor Vehicle Administrators and the National Conference of Governors Highway Safety Representatives. Noel Bufe serves on several of the TRB
technical committees. Over the past several years, we have benefited from the active participation of NHTSA staff on the Board's planning and technical groups.

I mention this situation, not to throw accolades, but to emphasize the close and cooperative relationship between agencies concerned with a common problem. I hope that this Forum will result in even closer working relationships.

At this point, it might be well for me to briefly comment on the role of the Transportation Research Board in the field of traffic records systems.

The Transportation Research Board is one of the oldest and, at the same time, one of the youngest organizational units within the National Academy of Sciences. The TRB officially came into being in March of this year, but the organization from which it sprang, the Highway Research Board, traces its history back fifty years to the 1920's.

Traffic accidents then, as now, were a major problem. In 1925, the traffic accident death rate was computed at nearly 18 deaths for every 100 million miles of automobile travel. During this period, there was a great deal of searching and groping for solutions. Early approaches to the traffic accident problem were largely based on trial and error.

There was no alternative at the time. Traffic accident records were not collected, analyzed, nor used. The "trial and error" approach was the only course of action. That approach may have been justified fifty years ago, but it can hardly be defended today.

During the 1940's, the Board established a Committee on Accident Records. Even at this early date, it was obvious that most states were collecting data separately on accidents, drivers and vehicles. In the 1960's a move toward integrated traffic records systems was beginning to take shape. It was during this period that the Board's Accident Records Committee became the Committee on Traffic Records with an expanded scope to include all traffic records.

Progress in this effort has been slow, to be sure. While we have developed a system approach to the collection and analysis of traffic
data, we still face the task of putting this information to use in both operational and research programs. We have much to do in this direction, and I agree that this is a top priority.

With all deference to the expertise gathered here today, I would like to share with you (some very candid) observations about the immediate challenge facing us.

Improved traffic records systems must be responsive, primarily, to the needs of operational programs. At the same time, effective operational programs must be based upon facts and the results of good research. If we do not accept this as a basic premise then we shall continue the searching and groping for solutions.

Taking this point one step further, we need facts to lead the way to new and more effective programs. At the same time, we need facts to properly evaluate the effectiveness of currently advocated operational programs.

There are many examples to illustrate this need. The standards contained in the Manual of Uniform Traffic Control Devices are necessary and represent a major step towards national uniformity in this area. Even so, many of these standards are based on the best available judgement rather than on sound research.

In the area of driver regulation, we must also admit that traffic records have not been used extensively to evaluate the effectiveness of pre-licensing tests, the results of driver education, and other types of driver control measures.

In fact, the misinterpretation of small amounts of data has unquestionably misled many good-intentioned highway safety efforts. Too often in the past, highway safety program managers have forgotten a fundamental fact in statistics, - that the sequential occurrence of two events does not necessarily mean that one is cause and the other effect.
The history of many traffic law enforcement programs clearly indicates that results, if any, are usually quite dramatic and occur during the early stages and only during the early stages of the program. This has been especially noted in programs aimed at speed control, driving while intoxicated, and even enforcement of pedestrian regulations. We need to know more about the reasons for temporary or short-term results.

Some significant work has been done in this area by Dr. Larry Ross of the University of Denver, but much more needs to be done.

The committees of the Transportation Research Board have a very special mission. The Traffic Records Committee, similar to all other committees is charged with monitoring developments in its technical area, to identify critical research needs, to stimulate research to meet the needs, and then to disseminate the results of research. Stimulating the application of the results of good research is also a high priority.

Our Traffic Records Committee recently developed several research problem statements. One of them is quite significant. It calls attention to the urgent need for the development of a better method of evaluating and reporting losses in motor vehicle traffic accidents.

In defining the problem, the Committee states that in measuring accident experience, two yardsticks may be employed, one based on frequency of occurrence and one based on severity or extent of loss. For half a century, essentially the same crude description has been used to evaluate the harm or loss resulting from a motor vehicle accident. The accident is categorized as fatal, injury or non-injury. Thus, as far as input to the records system goes, a scraped fender on an old car is as serious as a tractor trailer which overturns and burns with no injury to the driver but with a $50,000.00 property loss.

The Committee has recommended research to analyze existing severity scales, to devise a scale or index which will combine elements of loss to be more indicative of the real severity, to calibrate the scale through controlled crash tests, and to test the concept for field usefulness and managerial acceptance.
The National Highway Traffic Safety Administration has done some preliminary work on such a method. The Traffic Records Committee hopes to enlist the support of many organizations, official and private, to advance this research effort.

The program of this Forum reveals a strong emphasis on putting traffic records systems to use once we have the records. I am confident that better use of traffic records systems will lead to improved highway safety programs which are firmly rooted in research and supported by demonstration.

General Richard E. McLaughlin
President
American Association of
Motor Vehicle Administrators

Chairman Bill (Fraseney), Dr. Gregory, fellow panelists Bill (Carey), Noel (Safa) and Vince (Tofany); and distinguished Forum participants:
It is a distinct pleasure to--in my initial commitment as AAMVA President--have an active role in this Forum, dedicated to a program area which, in my opinion, has virtually an unlimited capability of impacting the bottom-line highway safety results to which we all aspire, and to which Jim Gregory alluded. Our Association is proud to co-sponsor this forum.

AAMVA has an obviously substantial interest in uniformity in data systems design for traffic records, due to the ever growing demand for expeditious interchange of data among states. Therefore, it should not be surprising that AAMVA and NHTSA are in basic agreement regarding most of the points made by Dr. Gregory; hence, the climate conducive to a "partnership" approach currently is prevalent.

A concomitant priority of AAMVA in data systems design is ensuring that it is responsive to guaranteeing a citizen's right to privacy--another contemporary issue prevalent from the highest reaches of government to the grass roots.

Initially, speaking on behalf of AAMVA, I would like to note that we are pleased at the formidable and challenging role for the states in
vehicle recall, envisaged by the Congress in 1974 legislation, and particularly by the NHTSA in Dr. Gregory's opening remarks.

Since states are the sole source for correlating names and addresses of registered vehicle owners with the vehicle identification numbers (VIN's) of vehicles identified as defective by the manufacturers, then it seemingly would follow—or, more precisely demand—expeditious completion and implementation of the VIN program that AAMVA currently has under development.

This then poses another inevitable question: Who is going to provide the financial wherewithal for this large scale, expedited development?

Perusal of the legislative history of this measure will be useful in putting current developments into perspective. The original bill (HR 5529) called for a Federal Auto Registry—a sort of counterpart to the National Driver Register—to provide the data necessary to carry out the recall of defective vehicles; it provided for the authorization of $70-million in each of the next three fiscal years—a total of $210-million—for the development of the Registry.

Maintaining that such a Registry would duplicate many functions currently being done by the states, AAMVA—in a statement to the House Commerce Subcommittee on Commerce and Finance—suggested development of three association-sponsored programs:

- The VIN project, which I already have mentioned.
- The american national standards institute (ANSI) D-19 committee project, to develop model vehicle registration and certificate of ownership procedures; and
- The ANSI D-20 committee project to develop a state-oriented model motorist data base; a project about which I will have more to say later.

It is significant to note that AAMVA recommended in its statement that if the three-point alternative was acceptable, that $1-million be authorized annually for three years to expedite program development and implementation. To make a long story short, the House Committee bought the concept,
and warmly endorsed it in the Committee report (93-1191) accompanying the legislation. But, in dropping the $70-million annual authorization for the Federal Registry, it neglected—or at least did not—insert any authorization to develop these AAMVA-sponsored alternatives; just a general authorization to fund the entire omnibus act.

In conference action, the Senate Conferees (IN s.355) incorporated the House legislative provision on this measure—leaving defective vehicle notification by the manufacturer based on information "reasonably ascertainable through state records or other sources..." This, in essence, was what ultimately made it's way to President Ford, was signed, and became Public Law 93-492.

I hope that Dr. Gregory can amplify his agency's plan for implementing this legislation—particularly the financial features for development of the data systems features implicit—in the ensuing discussion.

The statement by Dr. Gregory that "a good traffic records system is a bottom-line item for planning, operations and evaluation functions" certainly is an apt observation.

Therefore, our Association firmly believes that the contract recently negotiated with NHTSA, to support expedited development of the ANSI D-20 Project is—albeit a "small step for highway safety"—assuredly a step in the right direction to providing state and local traffic records capability in all jurisdictions.

The Model Motorist Data Base seeks to provide interfacing capability—both on an intra- and inter-state basis—in driver records, registration/title records, accident records, engineering records, enforcement (including both police and court) records, and driver improvement records. This, from our perspective, will be a giant step toward a systems approach to the bottom-line results which we are so diligently pursuing.

There is a substantial mutual interest between the D-20 Project and development by NHTSA of the Design Manual for State Traffic Records Systems—euphemistically known as "Dewey Jordan's Cookbook" because of the influence our distinguished Forum Chairman has had on it's development.
Furthermore, it appears that several other data programs outlined by Dr. Gregory will have varying impacts on state highway safety efforts: the Fatal Accident Reporting Systems (FARS), Multidisciplinary Accident Investigation (MDAI), the National Accident Reporting System (NARS), the National Center for Statistical Analysis of Highway Operations, if the study determines that it is indeed feasible; and, most particularly the Traffic Safety Programs/Management Information System, which will be targeted at program management of state and community programs.

Therefore, AAMVA believes that one of the basic objectives of this forum, in order to maintain a viable, working "partnership" and to attain the bottom-line results which we all so diligently seek, should be to set forth a clear definition of the role of the Federal Government—vis-a-vis state and local government and the private sector—in the whole area of traffic records systems.

If I may illustrate: Driver and vehicle histories currently are collected at the state level, and correctly so from our perspective. It is our position that these kinds of data should remain at the state level, with the Federal Government maintaining an index. Both the philosophy underpinning the ANSI D-20 Project and the apparent intent of the 1974 legislation on vehicle recall would seemingly support this position. But there are some other indicators that would tend toward almost the opposite.

Therefore, I believe virtually everyone at this forum would be intensely interested in hearing Dr. Gregory's views on this issue, during the ensuing discussion.

AAMVA also believes that it would be appropriate for Dr. Gregory to speak to NHTSA's views on the future role of the National Driver Register; particularly how it fits into the Federal agency's overall traffic records system planning. It was suggested in 1973 at a national forum in Louisville, that since the NDR is dependent wholly on state input, that it would be appropriate to have a policy advisory committee, composed of state driver licensing authorities. Our Association believes that such a suggestion is meritorious and would enhance the "partnership" necessary
to make such a program operative.

But, we would be pleased to hear Dr. Gregory's views on this and overall NDR future activities.

Finally, many people look upon a traffic records system as a total management information system. But in order for a management information system to elicit data for impacting bottom-line results, it is necessary to have an effective communication system—the conduit for transmission.

Proliferation of national communications' systems (parenthetically, I should note that there are reportedly upwards of 800 Federal systems alone) has led to a legitimate concern that there will be fragmentation of records systems capabilities—with no one comprehensive system capable of eliciting instantaneous communications.

In this respect, we would hope and trust that Dr. Gregory, on behalf of NHTSA, would exert vigorous leadership toward coordinating information systems developed within Federal agencies—particularly those systems which have an impact upon state government as it applies to motor vehicle administration, traffic law enforcement and highway safety. Furthermore, we would be pleased to hear any comment that Dr. Gregory might have in regard to this growing concern.

I am quite certain that I have not begun to cover all of the questions which AAMVA and it's members have regarding bottom-line, results-oriented utilization of traffic records systems. But, my time is up and I thank you for yours.
SPECIAL TRAFFIC RECORDS REPORTS

Elbert Hugunin, Secretary  
Traffic Records Committee  
National Safety Council

The Traffic Records Committee was created in 1973 to replace the Traffic Accident Data Project Steering Committee when the National Safety Council discontinued the Traffic Accident Data Project.

The Committee now has 72 members in the following categories:

1. National organizations  16
2. State administrators  44
3. County administrators  5
4. City administrators  7

Six states are not represented; more major cities should have traffic records system administrators on the Committee. We lost a dedicated member and long-time traffic accident records administrator this year. Director Thomas P. Ryan, Accident Records Bureau, Nebraska Department of Roads died last summer.

This National Forum is the major effort of the Committee for the year. We hope it will continue to be a major effort in future years because one of the Committee objectives is to provide a forum on traffic records systems for state and local traffic records system managers, including the collectors and users of traffic records data.

Your Secretary is attempting to develop a roster of principal traffic records system administrators, but there are problems. There has been no response from some states; in other cases all members of a state department have been listed as principal traffic records system administrators. And time is very limited because I'm Secretary to this Committee, the Committee on Alcohol and Drugs, and the ANSI D16 Committee which is considering revision of the Manual on Classification of Motive Traffic Accidents. However, this roster of administrators will receive much attention following this meeting. And I do hope that the Council finds a way to provide a full-time Secretary by the time I retire next September.
Every member of the Committee has been asked to submit comments on possible revision of ANSI Standard D16.1, *Manual on Classification of Motor Vehicle Traffic Accidents*. We hope you have discussed this project with state, county and city traffic accident records administrators. A roster of the ANSI D16.1 Committee was included in your registration envelope. The Chairman is here; you should chat with him during the Forum. Dr. Chatfield, will you please stand to be recognized. If the *Manual* is revised, the Committee may need to revise accident report and summary forms produced by the National Safety Council.

David M. Baldwin, Chairman
Committee on Traffic Records
Transportation Research Board

The Committee, like all TRB committees, is charged with the identification of research needs, the stimulation of research, and the dissemination of research results. It is not charged with (nor is it capable of) the conduct of research.

Committee A3FC03 has been holding two meetings a year. It has produced several problem statements, identifying needed research. Last year, it held a workshop at a secluded location in Colorado to discuss the management of traffic records on a systems basis. A report is now in the process of publication by TRB, and we believe it has plowed some new ground and will thus be of interest to many people.

Marie D. Eldridge, Acting Director
Office of Statistics and Analysis
National Highway Traffic Safety Administration

It is a pleasure being with you today and I am particularly pleased and honored to be a part of the *FIRST* National Forum on Traffic Records Systems. I hope that this marks the beginning of an ever improving exchange of ideas between us that will further our common goal - Effective Traffic Records Systems. The agenda is impressive and clearly sets the tone for future Forums. When Dewey first suggested that I talk to you about our data systems, it seemed that I should stress our dependence on valid data from the field - but after thinking about that for a
moment, I realized that I'd be just about in the position of the minister preaching to the choir on the importance of coming to church every Sunday. I am fully aware that my requirements for valid data in developing our national data systems are simply an echo of your own State and local needs.

Because we are all basically in the same business and since this is our first Forum, I thought that I would share with you a few of my observations about the very attractive but illusive concept of the development of a comprehensive highway safety data base and then bring you up-to-date on our current efforts.

It is certainly not necessary to review the vastness of the problem with this group. We are all well aware that traffic accidents, as we define them now, have been with us for more than 50 years. But, a quick pass at some of these figures may help to sharpen our perspective when we contemplate where we've been and where we are going.

We have 103,500,000 cars on U.S. roads today. I read recently that more households own cars than own television sets or washers or dryers or air conditioners. We have twice as many cars as houses in this country. Those houses are surveyed every ten years in the decennial census. Can you imagine the reaction if we suggested that we conduct an auto census on a ten-year cycle? Not only are there more cars than houses but unlike houses, the cars are moving all the time. It was estimated that 1.3 trillion vehicle miles were clocked in the U.S. during 1973. 1.3 trillion miles is such a mind-stretching figure that even comparisons are hard to grasp. It is equal to more than two and one-half million round trips to the moon. Whether or not we can meaningfully comprehend this number is irrelevant; what must be borne in mind is the fact that this 1.3 trillion miles (which may approach 2 trillion in 1980) is the universe of our interest, if we are talking about traffic safety as it impacts on every citizen.
Now let us look at the state of the methodologies now in use. Much has been said about the data deficiencies, the need for standardization, the importance of efficient retrieval systems. So my observations in this regard are not new. But, because we are faced with a very difficult problem, and one which must be resolved, I believe we might profit from spending a minute or two on the subject. Permit me to first read the opening sentence of the report of the Committee on Statistics of the First National Conference on Street and Highway Safety called in 1924 by the then Secretary of Commerce Herbert Hoover:

After a thorough survey of the field of traffic accident statistics, the Committee ... finds as an outstanding feature that there is almost total lack of systematic effort to secure accurate and complete data regarding such accidents, their types and causes, and methods of prevention.

That was said 50 years ago and it still serves to succinctly identify what we are slowly, but gradually, trying to accomplish with our data systems.

We have produced classification standards in many areas and, as Dr. Gregory said earlier this morning we encourage and want to work with you toward effective data standardization at the local, State and national level. One of my chief concerns has been the accuracy and objectivity of the data we are collecting. In this regard I am reminded of a comment of an English judge on the subject of Indian Statistics, as quoted by Sir Josiah Stamp in his book "Some Economic Factors in Modern Life" (Published in 1929) which goes like this:

The Government are very keen on amassing statistics. They collect them, add them, raise them to the nth power, take the cube root and prepare wonderful diagrams. But you must never forget that every one of these figures comes in the first instance from the village watchman, who just puts down what he damn pleases.
Translating that to our present day environment tells us that it is still important for us to train, motivate and reward the "village watchman" to insure the quality of data we all need.

Permit me now to become a bit more specific about the data systems effort currently being carried out under my direction in the Research and Development area of the National Highway Traffic Safety Administration. Our prime responsibility is to produce meaningful analyses of causative factors in accidents so that steps can be taken to save lives in the future. In order to do this, it is necessary to have data files that reflect the real-world. Except for special studies, these files must be representative and the level of detail, must reflect the level of expertise available in gathering the data.

With these considerations in mind, our long-range planning is built around major data collection efforts on two levels:

1) In-depth research files
2) Statistical files

For the first type of file, we are using the Multidisciplinary Accident Investigation team approach. In-depth accident investigations have been and will probably continue to be one of the principal means to identify safety problems. These multidisciplinary investigations currently involve a clinical case-by-case examination of a selection of crashes and are currently being conducted at a rate of about 850 a year.

The selection of the cases is dependent on the availability of investigation teams and the cooperation of those involved to participate in the investigation. Not only is the geographic coverage important in these investigations but the clock hours during which the team is standing by for the crash is also relevant. Significant steps are now being taken to convert the NHTSA accident investigation effort to a probability base which will provide the research community with a valid data base from which statistical inferences can be drawn.

Our method of approach to the second or statistical files is of course
quite different. The data in these files are limited to those elements which can be collected from existing State records. For example, it is envisioned to include data from -

- Accident report forms
- Vehicle registration files
- Drivers licensing files
- Highway department files
- Vital statistics files

Many of you have already been apprised of the current revamping of the Fatal Accident File. We have scheduled Regional meetings prior to the first of the year to familiarize everyone with the nature of and reasons for the redesign of the system. We do not believe that we are unduly optimistic in aiming for the release of standard output from this file before the end of the fiscal year. A very important aspect of the file which we have not had heretofore will be the feedback capability so that the States and Regions can look at their trends in relation to their counterparts elsewhere in the country.

As soon as the FARS is operational, our research staff will concentrate on the larger file encompassing all accidents in the United States. While we have ideas as to how we will probably develop this, as a refinement of the SAFE file, I believe it is premature to be very specific at this time. The problems are very complex and all too often we find a tendency to avoid the messiness of real problems by omitting embarrassing aspects or by making simplifying assumptions otherwise stated as "throwing away the complex baby and measuring the relatively simple bathwater."

I'm sure that my time has more than run out so in summary I'd like to end on a positive note. We have many problems to be resolved. The solutions won't come about overnight but I believe that the view is worth the climb.

- 30 -
A. Dewey Jordan, Chairman
Traffic Records Committee
National Safety Council

It is a pleasure to be with you today and participate in this First National Forum on Traffic Records Systems. The opportunities and responsibilities for impacting traffic safety programs through the effective utilization of traffic records are enormous. Today, I would like to report some of the major accomplishments made by State and local governments in traffic records systems, report on current activities of NHTSA and review future plans.

You can be proud of your accomplishment in developing traffic records systems to service the data needs for traffic safety programs. Traffic records systems have seen a phenomenal growth in the past few years primarily through the emphasis placed on this subject by the "Highway Safety Act of 1966." The credit for the major accomplishments, however, belongs to the dedicated State and local people who appreciate the need for valid traffic records systems. At this time I would like to review just a few of the more significant achievements:

MAJOR ACCOMPLISHMENTS

- 35 States have established rapid response to driver and vehicle status through the use of computer terminals
- All States and territories have accident data computerized to some degree
- 41 States have projects to upgrade motor vehicle and driver data to computerized systems
- 40 States now require the use of a uniform accident report form either by legislation or Executive Order
- Since 1966 at least 46 States are in the process or have implemented new uniform police accident reporting forms -- 40 of these since 1971
- 26 States have enacted legislation pertaining to traffic records
- 25 States have established an effective traffic records committee
In 36 States, 170 major units of ADP equipment have been purchased

109 State and local traffic records systems have been designed and developed

70 traffic records subsystems have been implemented in 27 States

620 new traffic records personnel have been hired, providing 29 States with 135,000 man days of effort

2,600 traffic records personnel have been trained (100,000+ accident investigators trained in use of new uniform accident form)

Now I would like to briefly describe some of NHTSA's recent activities in support of traffic records systems.

**DESIGN MANUAL FOR STATE TRAFFIC SYSTEMS**

Foremost, the Design Manual for State Traffic Records Systems, distributed to all States in October 1973, is the most significant technical publication developed by NHTSA in this important area. The Design Manual contains two volumes. Volume I contains a complete description of the concepts, organization and operation of an integrated Traffic Records System. The data base structure for the integrated traffic records system is comprised of eight data subsystems. The detail content of these subsystems are described in Volume II. Each of these data systems is oriented toward a functional area of the total highway traffic safety program. To facilitate the use of this manual, the sections describing each of the subsystems have been produced as separate documents. The documents comprising Volume II include:

- Section 1 - Driver Data Subsystems
- Section 2 - Vehicle Data Subsystems
- Section 3 - Roadway Environment Data Subsystem
- Section 4 - Accident Data Subsystem
- Section 5 - Emergency Services Subsystem
- Section 6 - Traffic Law Enforcement and Adjudication Data Subsystem
- Section 7 - Educational Services Data Subsystem
Section 8 - Safety Program Management Data

Subsystem

Six complete sets of the Design Manual were made available to the Governor's Representatives. If additional sets are desired they may be purchased through the Government Printing Office as described in the Design Manual mailer.

MODULAR BRIEFING

A modular briefing package on the Design Manual has been prepared for use by the States and the Regional Offices. It includes a narrative and 35 mm slides for all aspects of the Design Manual. Copies of the narrative will be mailed to the Governor's Representatives in the next few weeks. NHTSA Regional Offices will receive a complete package including the narrative and slide which may be loaned to interested States.

A BASIC COURSE IN TRAFFIC RECORDS

This past year I saw the completion of a three-part Basic Course in Traffic Records by NHTSA. These curriculum materials enable individuals currently working in the traffic records field to increase their competency in the performance of traffic records data processing and analysis. The curriculum materials consist of a Course Guide used in planning a training program in traffic records, an Instructor's Lesson Plan for use in conducting the program; and a Student Study Guide which serves as a test/workbook to supplement classroom presented material. A one time only complimentary distribution of the three-part curriculum was made to Regional and State personnel.

STATE TRAFFIC RECORDS SYSTEM TRANSFER

NHTSA through Regional Office and State personnel have begun the important task of demonstrating the feasibility of transferring a traffic records system from one State to another. This ability to transfer systems and computer software is being demonstrated in the State of Idaho. Potential benefit to NHTSA and the States from the implementation of this program is enormous in both cost and time. The Idaho
project is to evaluate current traffic records systems in relation to Idaho's current system status and to assess the transferability of system components in other States. Pat Ehrlich will report fully on this project.

**TRAFFIC SAFETY MANAGEMENT INFORMATION SYSTEM**

Earlier Dr. Gregory talked about the TSP/Management Information System effort. I would like to report that we are now in the beginning phase of the system definition and the development of a data dictionary. Some Regional offices and States have been visited for input; all AWP/CPs have been reviewed for currently available data for the system. Once the draft system definition and data dictionary are completed we will solicit your guidance in the final format and content.

**FUTURE ACTIVITIES**

Although much has been accomplished in developing traffic records systems to service the highway safety effort, we have just begun. It is time to pay increased emphasis to satisfy the data needs of the users of traffic records systems. Our planning activities for future support of traffic records programs are designed to give greater emphasis for the development of data bases for determining the expected payoff of operating program activities in terms of impact on fatalities, injuries, accidents or societal losses. Some of our major objectives are:

- To assist States in the development, demonstration, and implementation of traffic records, technical materials, procedures and model systems feasible for supporting traffic safety programs.
- To define and develop uniform traffic records systems through standardization of data elements for the various data subsystems.
- To provide technical support and assistance to the States and local government agencies in identifying traffic records systems computer software availability and transferability.
To institute a priority program to optimize existing traffic records systems to meet minimum data element requirements, data availability, and data analysis for establishing management by objective (MBO) programs in each State.

To develop and maintain a management information system which is responsive to the needs of traffic safety program managers in headquarters, regions and States.

That concludes my report on traffic records accomplishments and plans. I will be glad to answer any questions you may have.

Thank you.

Jack H. Leverenz, Director
Vehicle Services Division
American Association of
Motor Vehicle Administrators

Thank you, Mr. Chairman, Dr. Gregory, Ladies and Gentlemen. My assigned task is to give the AAMVA Data Processing report; however, this Forum and its participants represent the thrust of AAMVA data processing efforts. I would like to read several of the objectives of AAMVA as written in its Fact Brochure. Each objective of our association relates in some way to the Traffic Records Systems business at hand, either as an input device or a program in vital need of the development of a coordinated data system for traffic record keeping. Some objectives of AAMVA are:

1. To promote uniform laws and regulations for motor vehicle registering, titling and driver licensing.
2. To encourage standardization and uniform enforcement of motor vehicle and traffic laws.
3. To work for reasonable reciprocity laws and procedures among all American jurisdictions.
4. To support the concept of safe motor vehicles, maintained by programs of state and provincial motor vehicle inspection.
5. To conduct and support studies of traffic accident causes and prevention.
6. To work harmoniously with all highway transportation agencies.
7. To coordinate communication among members.

The direction our AAMVA endeavors have taken have not only been to coordinate activities but to initiate programs that were projected to acclimate to far reaching efficient vehicle administration activities. We are working toward a joint, coordinated standardization that supplements or relates to NHTSA and other Federal and local programs.

Initially over five years ago, in developing our vehicle services programs, we projected our plans toward an interstate data network of state Motor Vehicle Department data systems, interfaced with state law enforcement systems. We even went so far as to think about nationwide automated vehicle identification. We did not talk too boldly on the subject of AVI, for we did not want our Administrators to question our credibility. Staff longevity was much more stable if projections, such as AVI as you now know it, was left to the wiles of Captain Marvel or Dick Tracy.

However, we found that we started on the wrong end.

To reach the optimum of our goals we were required to retrogress to the basics, which in the vehicle area was development of a unique vehicle identifier, which we now call the VIN—the Vehicle Identification Number. At the time we began this project, there were 62 different terms used in state and manufacturer documentation that referred to the VIN. We found that we even had to go further back to basics and develop a common terminology. Divisions of the big corporations that manufactured different models of vehicles were not even using a standardized language.

We now began talking about the VIR, the Vehicle Information Record. We projected this into the overall results of our efforts on the top side. It would be necessary to have the standardization and uniformity of all our projects to be able to utilize the VIR efficiently. The VIR would actually be a birth-to-death vehicle history printout that would be retained by one agency or keyed and coordinated from several. The input would begin with the manufacturer developing a machine-acceptable document as the manufacturer's statement of origin, either using OCR,
punchcard or other non-misconstruable input device that would be relayed through the dealer and into the state data records bank without the necessity of rewriting or typing the VIN or other essential information.

The next step was to begin development of a model registration and certificate of ownership procedure which is now the AAMVA/ATA-sponsored American National Standards Institute Committee D19. The D19 is functioning and is addressing the following eight areas by Subcommittee action:

1. D19.1 - Standards in Terminology
2. D19.2 - Standard Procedures to Establish Ownership and Security of Interest
3. D19.3 - Standards for Reciprocity and Registration for all Classes of Vehicles Involved in Multi-jurisdiction Operations.
4. D19.4 - Uniform Records and Documents Compatible with Data Processing Use
5. D19.5 - Uniform Procedures for Original Renewal and Transfer Registrations for Motor Vehicles
6. D19.6 - Registration Procedures Capable of Accommodating Vehicle Inspection Requirements
7. D19.7 - Registration Procedures that will Expedite Efficient Disposal of Abandoned and Derelict Motor Vehicles

Now the crux or purpose of our efforts in standardization was to set up a vehicle or medium for the development of a Model Motorist Data Base. This we did in the same manner as with registration procedures. We initiated a AAMVA-sponsored American National Standards Institute Committee to develop a Model Motorist Data Base. Task Groups have been divided into thirteen technical committee functions addressing the following areas:
I would like to point out to you, ladies and gentlemen, the importance of this type of endeavor as an ANSI procedural standard. It would be extremely difficult for the State people charged with specific administrative duties—or the Federal government without the aid of the states—to accomplish the resultant goals that we have set out as ANSI standards. The involvement of such broad based interest makes it almost impossible to satisfy all of the ANSI committee constituents, however, the need for a consensus approval as required under ANSI committee procedures, we hope, provides us with the tools that will enable us to come to positive conclusions. We have been able to utilize the expertise of government—Federal, state and local, as well as the expertise of the representatives of the many interested industries. This voluntary technical expertise would not be available to us without the spending of tens of thousands of dollars.

Having given you the background of some AAMVA endeavors, I do not want to leave you with the impression that the individual states and the AAMVA standing committees are not continually addressing the previously mentioned problems and areas of endeavor.
In April of this year, AAMVA held a national forum on Drivers License and Data Processing, specifically addressing numbering systems. The charge to the Forum was to develop a number that would supplement the social security number, if there is a need. It was determined by the Forum that a unique driver identifier should be developed to safeguard driver privacy. There was a division of thought as to the construction of the primary number to be used as a driver identifier; however, a resolution was passed that the jurisdictions utilize driver identifier data elements as developed by the ANSI D20.3 Technical Committee on Driver Data. It was recommended that each jurisdiction seek legislation to require the submission by the driver of his social security number. A resolution was also passed that Congress be petitioned to exempt from Federal legislation any prohibition of the use of the social security number by the state governmental agencies dealing with highway safety-related records. Another recommendation cited that it should be permissible to include personal characteristics within the identifier.

In October, AAMVA Region II held their data processing workshop in Charleston, South Carolina. The central topic of discussion was on Motorists Data Systems—Standardization and Exchange. The workshop endorsed the use of the social security number and also reiterated the position of the National Drivers License and Data Forum in regard to the D20.3 recommendation for the driver identifier. One of the resolutions adopted recommended that AAMVA promote an interface between AAMVA, the National Crime Information Center (NCIC), the National Driver Register, and the National Law Enforcement Teletype System to determine the feasibility of establishing one comprehensive data communications network.

Ladies and gentlemen, it becomes more apparent that our meeting here in New Orleans may have an omnipotent affect on future systems activities that will be taking place in regard to traffic records systems. It seems quite apparent that a cooperative effort is essential in developing direction that is of apparent value to bottom line results.
Although it may or may not be acceptable to those issues on privacy, we must determine proper security methods to employ in our traffic record systems and then move on to develop the procedures that are necessary to the public welfare and utilize essentials such as a unique vehicle identifier and unique driver identifier to protect the rights of the driving citizen.

Ralph J. Haller
Technical Consultant
American Association of Motor Vehicle Administrators

Mr. Chairman, representatives of the Transportation Research Board, the National Highway Traffic Safety Administration, the National Safety Council...and guests.

In the course of my first several remarks, I would like to briefly digress from the topic matters of this Forum, and address a subject involving "thieves, theft, and income."

If I had the temerity to suggest that the Motor Vehicle jurisdictions of these United States and Canada...may be of unwitting assistance to motor vehicle thieves...it is possible that my continued tenure at this lectern could abruptly cease.

So let's try another tack...Has inflation caught up with you...Do you have a continuing yearn for Cadillacs, country clubs...a second home in Florida...diamonds and other expensive trinkets...

Well good!! For I can counsel with you as to the benefits that may be realized by embarking on a new, lucrative career, that of stealing motor vehicles.

Consider these economic factors...no taxes...no advertising expense...no unions to contend with...

Motor vehicles are easily stolen...easy to reduce to unidentifiable parts...easier yet to dispose of...
Dependent upon the type of vehicle, 15 to 75% of stolen motor vehicles are never recovered by law enforcement agencies, thus the chances of not being apprehended are astonishingly excellent for the professional motor vehicle thief.

Motor Vehicle theft is but one aspect affected by and involved in the State of the Art in Motor Vehicle Title, Registration, and Vehicle Identification. . . There are many more.

Fifty-one of the fifty-two jurisdictions in the United States have a title law. The one remaining jurisdiction not yet affording the protection and benefits of a title system is well under way toward this realization.

Good!! . . . All states will then have a title law. . . But not so good, is the knowledge that the existing degree of title and registration sophistication, and particularly the procedures implementing the title laws, vary to such extent among the jurisdictions, that we are experiencing a continuing crisis in accommodating the requirements of the public, state and federal legislators, the programs of the National Highway Traffic Safety Administration, including uniform traffic record systems, and in the ultimate fulfillment of the National Highway Safety Act of 1966.

The constant and yet growing migration of the public and their motor vehicles from state to state, and between the United States and Canada, further prohibits the minority viewpoint that a given jurisdiction or federal agency, need have concern only within its own environs. No more!!

The "paper war", in itself, is a major problem of the 1970s. We are plagued, we are inundated with mountains of paper, forms, notices and directives. Thus the computer age and its accompanying intricacies further defy the meaningful expedition of intrastate and interstate motor vehicle administration.
And all of these considerations involve the motor vehicle. • • What is a motor vehicle? • • Well, certainly you know the answer to that question. You can see a motor vehicle. You can describe it. On an application for motor vehicle title, you can list its' physical attributes...But then we have that computer to contend with. Computers do not operate in the context of the English language. Computers do operate in the context of machine instructions and codes. • •

The identity of a motor vehicle is supplied by the manufacturer by virtue of a code known as the Vehicle Identification Number, also known by its acronym the VIN.

The VINs of most automotive manufacturers today are not uniform in content or coding structure.

The use of computers naturally necessitates standard, uniform input. So another major problem of the motor vehicle administrators, and the various federal agencies in the 1970s is due to the lack of uniform vehicle identification number systems.

In summary at this point, the State of the Art of Motor Vehicle Title, Registration and Vehicle Identification is readily indicative of the need for uniform procedures, uniform computer system applications, and uniform vehicle identification number systems. • • And, if you please. • • all of this to be accomplished by means of a cooperative venture of the AAMVA and the States and the Provinces of the United States and Canada, and, hopefully, in the United States, with a continuing partnership and meaningful cooperation of the National Highway Traffic Safety Administration.

To the question of what is being done in these matters:• • Since January 1970, the AAMVA has pioneered in the design and development of uniform vehicle identification number systems.

Some thirty-four separate programs are involved in the AAMVA VIN Program package, including; VIN-oriented terminology, VIN system design for each family of vehicles, VIN recording, VIN display on the
vehicle, and uniform methods for VIN masterfile design and access by the state and provincial motor vehicle jurisdictions.

During the model years of 1972, 1973 and 1974, approximately 60% of new passenger cars registered in the United States and Canada contain a VIN which fulfills the requirements of the AAMVA VIN Programs.

Continuing implementation of these programs is assured by virtue of the interest and in the activities of the Vehicle Equipment Safety Commission (VESC).

Many people have been responsible for the success of our VIN programs, and I believe it is timely, today, to note the particular contribution of the President of the National Safety Council, Mr. Vincent Tofany.

During the mid-1960s, Mr. Tofany, while serving as the Motor Vehicle Commissioner of New York State gave early recognition to our VIN programs, and provided continuing encouragement and personal support to me, at a time "when a guy really needed a friend."

Although no longer directly involved in motor vehicle administration, Mr. Tofany's continued interest in VIN uniformity, and his position that the VIN is an intangible but nevertheless, invaluable asset in motor vehicle safety accomplishment, is most certainly appreciated by the AAMVA.

Since March 1972, the AAMVA has responded to the thesis of uniform title and registration. The AAMVA in cooperation with the American National Standards Institute, is a co-sponsor of the ANSI D19 Committee for Uniform Procedures for registration and certificate of ownership.

The D19 Committee is composed of a membership, including: State Motor Vehicle Department Specialists, NHTSA, Federal Bureau of Investigation, Bureau of Standards, Department of Justice, Automotive Industry, Insurance Industry, and virtually all other segments of Government and industry involved in the process of motor vehicle administration.
Since March 1972, the AAMVA has been involved in the uniformity of state records and computer system applications, by which a data network would be provided between the jurisdictions for motor vehicle administrative purposes.

Thus another AAMVA ANSI Committee, the ANSI D20 Committee is responsible for development of a "States Model Motorist Data Base" toward this end. Membership of this committee includes the same basic interests serving the D19 Committee.

And now we hear from the Congress. . . . On October 28, 1974, President Gerald Ford signed into law, the Motor Vehicle and School Bus Safety Amendments of 1974, which the Automotive News publication describes as the most important motor vehicle safety legislation since the advent of the National Highway Safety Act of 1966.

Of particular interest to the AAMVA, was the House Report No. 93-1191, which accompanied H. R. -5529, and which eventually emanated as the subject Act, together with the Senate Bill, S-355.

I would like to read to you a portion of one paragraph, page 23 of the House Report.

Quote . . . In addition, your Committee notes that material was supplied for the record of the Subcommittee hearings by the American Association of Motor Vehicle Administrators concerning recordkeeping of the names and addresses of motor vehicle owners and purchasers.

The information indicates that there are several ongoing projects involving cooperation between state motor vehicle enforcement officials and engineering and trade associations. The goal is a system of model vehicle registration and certificate of ownership procedures, a uniform vehicle identification number system, and inter-jurisdictional data transmission.

It would be accomplished by planning at the State level. Your committee hopes for speedy implementation of this system which would aid in fully effectuating the Motor Vehicle recall provisions of this Bill and obviate the need for duplicative, costly systems — Unquote.
And so we have in effect a virtual mandate directed by the Congress to the States. The AAMVA, the States and the Provinces have a total commitment, so as not to be remiss in dedication or the productivity necessary for the completion and implementation of these programs.

In closing, then, it should be obvious that the AAMVA has a profound and vested interest in the success of the National Traffic Records System, for the realization of the D19, D20 and VIN programs must be viewed as a major contribution of the AAMVA and the jurisdictions to this end.

Thank you
TRAFFIC RECORDS SYSTEMS PROGRAM
ADMINISTRATION AND MANAGEMENT

Presiding Officer:

A. Dewey Jordan
Highway Safety Management Specialist
National Highway Traffic Safety Administration
Washington, D. C.
The traffic records system concept as a way of perceiving the various groups of information relating to the operation of motor vehicles has only recently come into common usage. Until about two decades ago, these logical groups of information were not thought of as all revolving around a common element; that being the motor vehicle or more specifically traffic safety. Instead, each logical group of information evolved independently to perform a specific operational function. For instance with the advent of the concept of licensing drivers came the need to keep track of who had a license and who did not. When traffic citations were conceived of, it became necessary to aggregate this information along with the driver license to form a driver history file. And so at various levels the different political entities evolved what we today would call a driver licensing system consisting of sub-functions such as driver examination, driver improvement and driver licensing. Similarly as the concentration of motor vehicles went up so did the number of accidents and thus accident reporting was born. Roads became more sophisticated and traffic engineers began to keep records of such things as the placement of signs, the allowable speed limit for sections of roads and the location of passing and no-passing zones.

At that time it would have been economically unfeasible to relate the information of the various traffic safety disciplines and it would also have been an exercise in futility given the primitive condition of these unconnected collections of data. And so safety efforts were for the most part limited to only a few agencies such as traffic engineering and law enforcement. To resolve this deficiency, traffic safety agencies were formed in the various states to coordinate and
maximize safety efforts.

In order to analyze each State's traffic safety needs, these agencies began to look at accident information and to find that causative factors were closely related to other categories of information such as roadway environment, vehicle defects, driver skill and attitude, alcohol involvement and other less controllable factors such as weather. In an attempt to correlate the various disciplines of information, it was discovered that some of the files of information were not stored in a logical order that would allow their use. Some files were only partially complete and partially accurate, some files did not even exist, and those that did were scattered around the State, some centralized, some localized all using different paper forms and different techniques of storage. Thus evolved the next concept, that of a traffic records system (TRS).

In 1967, in order to encourage the development of traffic records systems, the National Highway Safety Bureau issued the Highway Safety Program Standard defining minimum requirements for State traffic records systems. The intent of this standard was to bring together information from all agencies concerned with highway safety and to make this information available at both the State and local level. The traffic records system to be most useful should have all information available in a centralized data base or set of files with ability to interrelate vehicle, driver and accident information along with roadway characteristics and other information related to highway safety. This is done through the use of data linkages such as driver license number, citation number, vehicle license plate number and roadway location. These interrelationships of diverse operational data would allow evaluation of the relationship between the number and severity of collisions and their causes and contributing factors. The presence of this information in highly usable form would allow more effective operation of current highway safety efforts, evaluation to determine their maximum effectiveness, and for use in the planning of future highway safety efforts. The emphasis in the use of these traffic records should be in getting the maximum benefit in terms of accident reduction for the amount of
resources expended.

In order to realize these benefits, each state began to address this goal by deciding how they might bring together their traffic records components. The mixture of automated and manual systems and the lack of coherence of past efforts made this task more in the nature of building a new information system from the ground up rather than the mere enhancement of present systems. However, to develop an information system of the magnitude of a traffic records system required monetary and technological resources that most smaller states just didn't have. To alleviate this situation the National Highway Traffic Safety Administration helped to fund the development of computerized traffic records systems in a few carefully chosen states possessing different attributes of size and extent of centralization. It was not feasible to fund expensive system development projects in more than a few States. Furthermore it seems to be an unnecessary expenditure of funds for each state to "reinvent the wheel" in developing a traffic records system. Idaho proposed a different approach to implementing a records system. Briefly stated, we suggested we review our current records system operations and requirements against model systems in other states with the intent of determining the feasibility of transferring a records system from some other state to Idaho. Theoretically, since all traffic records systems perform similar functions it should be possible to transfer a system developed in one state to another state with a minimum amount of modification. We wanted to determine the economics of transferring a system at the concepts, design or programming level as compared to designing a new system. We also wanted to determine that even if it is economically feasible to transfer a system, would such a system provide the long run operational and economic benefits that a custom made system can provide?

We presented our idea to the National Highway Traffic Safety Administration as a demonstration project and it was accepted. The project germinated after the need was recognized to bring together the manual and semi-automated TRS components in our state. In July of
1972 the Idaho Alcohol Safety Action Project (ASAP) began operation, and in order to provide for record collection concerning drinking drivers, the ASAP staff began to piece together information concerning driver history, court disposition, arrest data, blood alcohol test data and accident records. This attempt to bring together these groups of information quickly pointed up the magnitude of our TARS problem. This magnitude was compounded when the Commission attempted to determine our priority problems to develop our comprehensive plan for FY 1974-77. The Commission realized the problem must be tackled but also realized the limited funds and manpower we had available from the various agencies concerned with record information. No single agency could devote the time and energy needed to develop the type of records system we needed. We were also concerned that provincialism could result in a system which was not developed with total cooperation of all agencies involved. It was therefore determined that the best results could be obtained by retaining an independent systems development firm to work with our agencies in developing a records system. We asked them to create a model master plan for the transfer and development of a complete traffic records system.

As a first step toward the creation of a model master plan, the consultant produced a work plan organizing the project into four major tasks: A survey of the current traffic records system, a statement of the functions and objectives to be performed by the new traffic records system, a conceptual design of the new system, and the creation of a model system design including system transferability considerations.

The first task of this project consisted of a survey of the status of traffic records in representative city and county governments and agencies of Idaho State Government. The results of this survey were reported in a current system description manual which described the status of each component of the traffic records system and the revealed problems in the present methods.

The second task was a statement of functions and objectives of the proposed traffic records system. These were documented in a new system
functions and objectives manual which provided an integration of four elements: A critical analysis of the current system, the results of a user wants and needs survey, federal guidelines regarding traffic record system contents, and a survey and analysis of the state of the art of three well-developed State traffic records systems.

The third task was the creation of a conceptual systems design manual. This task used the results of the preceding task, the new system functions and objectives manual, as a set of specifications to create a conceptual system design.

The final task was a more detailed design manual which addressed those considerations necessary to fit the components developed at the transfer site into Idaho's total TDS efforts. It also provided a relatively detailed design of those components which had not been developed at the transfer site but which are intended to be developed in Idaho as part of a total traffic records system. The output of this phase of the project was the model TDS system design and system transfer manual.

Throughout the development of the model master plan for the Idaho TDS there was a constant awareness of the need to develop criteria for the decision as to which State would be chosen as a transfer site. Although the Idaho Traffic Safety Commission was aware from the beginning that the West Virginia TDS had been developed with the idea of serving as a TDS with the potential of future transfer, this fact was discounted to assure that objective criteria were developed and that all aspects of a transfer were carefully considered before any decisions were made.

As a result, a list was developed of mandatory and desirable criteria for choosing a transfer site. The most obvious essential criterion was that the TDS system be able to run on computers available to support the transferred system. These included the Idaho Transportation Department and the Idaho State Auditors Office, both of which have IBM 370 series computers. Another constraint was that because of the small population of Idaho, the transfer site could not be a State such as New York or California. It must be a State of several million people or less with similar size staff of maintenance programmers.
costs of operation and maintenance, and costs of hardware and software to support the system. Another requirement was that the components of the transfer site's TRS must be closely compatible in terms of structure and data elements with the NHTSA Design Manual for State traffic records systems.

It was also considered necessary that the transfer site have a positive attitude toward a system transfer so that they would answer questions, provide copies of documentation, tapes of computer programs, sample reports, and other information necessary to support implementation in another State. A further consideration was the number of components developed at the transfer site. (The NHTSA Design Manual defines eight). We also considered the similarity of laws such as vehicle inspections and whether vehicle registration plates remained with the individual or the car at the time a vehicle was sold.

In terms of the structure of the traffic records system, the most desirable for Idaho was a centralized pool of information organized into computer data bases. This would allow immediate retrieval for on-line inquiry, update, or other purposes and also make it feasible to do intra-component studies such as the relation of vehicle inspection history to accidents, roadway environment to incidence of collision, and accident cause to types of traffic citations issued. This analysis of intra-component elements is called data integration and is accomplished by data linkages between separate component data bases. Without these data linkages, the availability of data in one central area and organized in approximately the same manner, such analysis would be very costly and if manual files were involved would have to be done by hand. In order to facilitate data base manipulation and data linkages, it is most desirable to utilize a management information system such as IMS, CICS, TASSMASTER, or DATACOM. These types of systems, available on a purchase or rental basis from software vendors relieve the computer staff of having to "re-invent the wheel" in order to provide capabilities of data base management. It is further desirable that the management information system provide telecommunications capabilities to allow for remote data entry and inquiry and retrieval. In evaluating
a management information system, the ease of modification should also be considered because of the fact that traffic records systems are still in their infancy and subject to continual evaluation.

Other transfer criteria that were considered desirable but not absolutely mandatory were the presence of secondary indexing of data bases, provisions for the collection of accurate data through either data controls or data verification, documentation of the system, availability of education concerning the software used, availability of programmers knowledge in the programming language used, and the reliability of the system (percentage of time the system was running trouble-free).

A further desirable attribute was that a particular item of data be stored only one time in the data base and that any element referencing it do so through a pointer to the original data element. A prime example of this is address data which could appear in the vehicle registration file, the driver history file, and on accident reports. This makes updating an address a difficult task. The solution is simply to leave a pointer such as the individual's driver license number in the vehicle and accident file and retrieve name and address from the driver file through an inquiry by driver license number.

In order to choose a State site for transfer, a list of potential transfer States was gathered by contacting a traffic records specialist in the Office of Standards Development and Implementation within the NHTSA. A list of seven was quickly narrowed down to three through written correspondence concerning their traffic records systems. The three main candidates remaining were the States of South Dakota, West Virginia and Arkansas. On-site visits were made to each State to gather in-depth information about the nature of the traffic records systems especially in regard to the previously mentioned transfer criteria.

Based on the results of the site visits, West Virginia was chosen as having a TRS most suitable for a transfer to Idaho. The entire project of creating a model master plan for transfer of a statewide TRS involved more than just the activities to produce the plan. It was recognized from the outset of the project that if it was to be successful it would
require support at the highest levels of State Government. Therefore, the first step of the work plan was to outline a project organization appropriate to the nature of the work to be done. Several determinations impacted the nature of the resulting structure. The project organization required representation from the entire spectrum of agencies involved with traffic records, as depicted in the chart below:

<table>
<thead>
<tr>
<th>TRS COMPONENT</th>
<th>AGENCIES AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Department of Law Enforcement</td>
</tr>
<tr>
<td>Accident</td>
<td>Department of Health and Welfare</td>
</tr>
<tr>
<td>Vehicle</td>
<td>Idaho Transportation Department</td>
</tr>
<tr>
<td>Traffic Law Enforcement &amp; Adjudication</td>
<td>Department of Law Enforcement</td>
</tr>
<tr>
<td>Educational Services</td>
<td>Department of Law Enforcement</td>
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<tr>
<td>Emergency Services</td>
<td>Department of Health and Welfare</td>
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<tr>
<td>Roadway Environment</td>
<td>Idaho Transportation Department</td>
</tr>
<tr>
<td>Safety Program Management</td>
<td>Idaho Traffic Safety Commission</td>
</tr>
</tbody>
</table>

At the same time it had to provide for informed policy direction, technical coordination and review, and coordination of project activities.

The resulting project organization was a three level structure. At the top level the Idaho Traffic Safety Commission provided policy direction and direct communication with the Governor through the Administrator of the Traffic Safety Commission, who is appointed by the Governor. The Commission meets once each quarter and provides top level policy directives, decisions, and a review and approval of project activities. The next level of organization is the Traffic Records Committee which meets monthly. This Committee is composed of a representative from each of the involved agencies. Each one of these representatives is qualified to establish and review technical guidelines for the developing TRS for his own respective area of knowledge. At the operational level a Project Committee composed of consultant personnel, personnel from the Idaho Transportation Department who will be responsible for the operation of the system, and a representative of the Department of Law Enforcement whose agency currently receives the accident forms meets weekly to
coordinate details of the implementation. To augment the above program management, data management will be provided by the State Traffic Records Coordinator who will report to the Administrator of the Idaho State Traffic Safety Commission. The position of Traffic Records Coordinator, when functioning in an operational capacity, will be responsible for coordinating between State agencies and will provide a motivating force for the resolution of problems and the further development and use of the traffic records system. He will further act as an arbitrator in the collection, use, and dissemination of traffic records information when questions arise regarding the propriety of use by agencies, and other similar security considerations.

The actual transfer task began in July of 1974. In order to supplement state resources, the U.S. Department of Transportation provided a grant of demonstration funds to the Traffic Safety Commission which then secured consultant services to aid in the implementation efforts. This together with 402 Funds supplied by the Traffic Safety Commission was used to retain a professional systems development consulting firm to supply personnel with previous experience in traffic records and knowledge of the IMS management information system which is utilized by IMS software.

The first task of the implementation effort was the creation of a project work plan to cover the next year of activities. The consultant met with Idaho Transportation Department personnel to review the major activities of the next year. A preliminary work plan was drafted and reviewed by the Traffic Safety Commission, the Regional Contract Technical Manager, and a traffic records specialist within NHTSA. Subsequent to this review, schedules were modified and other feedback was incorporated into the document to produce a finalized work plan. This work plan identified at an early stage all time dependent tasks mainly concerned with an upgrade of the Idaho Transportation Department's computer, the installation of IBM's information management system (IMS) and the revision of Idaho's statewide officers accident form.
The traffic records system will be implemented one component at a time. The accident component was chosen to be implemented first during the year of activity because of the readiness of the Transportation Department to participate in the implementation and operation of the accident component. Although West Virginia's accident component performs all typical functions of a data base oriented on-line accident system, the input and output of the system had to be modified to fit the Idaho revised accident form input and the report formats desired by Idaho. An early analysis was done to compare Idaho and West Virginia input and output and to define all data elements to be collected and stored. A review and approval cycle by the Traffic Records Committee of these data elements assured that all necessary elements were collected, that superfluous elements were dropped, and that there would be no eleventh hour request for modification.

A philosophical decision to be made in the upgrade of any system is whether or not to convert the existing files, in this case, accident history files, to the format of the new transferred system. In Idaho's case, this was not done because the existing accident form only collected a small subset of the data elements defined by the NHTSA Design Guide, and data was not verified and hence not completely accurate. However, it will still be necessary to put together data from the new accident system with data from the old system to create multi-year summary reports. This problem will be solved by the development of a file conversion program which will read accident records from the new accident surveillance data base and write out a tape of this data in the old format. These then will be kept until a full three to five year history is available on the new data base at which time the old files and the conversion program will no longer be needed. This conversion program also eases problems in scheduling the development of report generation programs to produce current reports which would otherwise have to be developed immediately.
Along with an analysis of the automated aspects of accident form collection and storage, the manual procedures involved were also carefully analyzed. Manual procedures usually develop over many years of operation and often old methods persist even though the conditions which occasioned their development have since changed. This was the case in Idaho. After a thorough discussion of the procedures for matching citizens and officers' accident reports coming in from the field, it was decided that since the citizens' reports are only used when an officer report is not present it should be feasible to do away with the citizen report and place a heavy emphasis on 100% officer reporting of all accidents involving over one hundred dollars damage. This was recently done successfully in South Dakota and legislation is now being drafted to do this in Idaho.

Other manual procedures were analyzed such as the flow of accident forms, the microfilming process, and the accident location coding procedures. As a result, most of the procedures were verified as being efficient. The location coding will be emphasized more heavily in the new system, however, so that location data will be more accurate to allow more precise identification of critical accident locations.

Other recommendations for improvement have resulted from the transfer project. With the use of a statewide accident form has come a growing need for standardization in other areas. The traffic citation form is another candidate for statewide standardization. Although a standard form has been available in the past through the Department of Law Enforcement, it is not widely used. In the future, this form could be modified based on suggestions from law enforcement agencies throughout the state and they would be encouraged to use it by giving them output reports from the new system. Another proposed improvement would be the pre-numbering of the officer accident report. This would allow ambulance attendants at the scene of a motor vehicle collision to record the accident report number on their report of emergency services. This would result in a positive match of accident and emergency
services data and would allow, when all TES components are operational, the correlation of accident information with emergency services data such as victim mortality to allow improvement in emergency services.

Presently, implementation activities are in full swing. Implementation of the first component will, in many ways, be much harder than for the implementation of subsequent driver and vehicle components because of the additional activities of a hardware upgrade, the installation of the IMS software, lack of familiarity with the IMS programming interface and data base concepts, and a new computer operating system. These all combine to make this first step the most difficult. However, overcoming this first difficult task will give us additional confidence in the implementation and development of the remaining TES components.

The results of our project activities will be published in a series of reports which will be available from the NHTSA. The final report will be a "how to" manual on transferring a records system from one State to another. Other States are also looking at the West Virginia system as a possible transfer site. If others decide to follow a path similar to Idaho, we see great potential for the future, there could be a sharing of experiences, joint or independent development of other components to the benefit of all participating states. The ultimate result will be that even the smaller States will be able to have their safety program management activities supported by up-to-date information systems for the ultimate benefit and increased safety of all users of the Nation's highway systems.

Ronald Marshak, Director
Shelby County (Tennessee) Traffic Safety Coordinating Committee

ACCIDENT INFORMATION SYSTEM (AIS)

In mid-1970 the Memphis and Shelby County Traffic Safety Coordinating Committee (TSCC) was established as an organizational vehicle to achieve a more unified and comprehensive approach to the reduction of crashes, injuries, and deaths. The TSCC is composed of 17 member agencies and
several ex-officio agencies representing the city and county government and volunteer agencies with some responsibility to traffic safety. The TSSC has a paid staff of nine employees, four of which devote all their time to Traffic Records.

We function specifically in two areas—the Cooperative Management System and the Accident Information System. The CMS is the planning and control process and organizational structure through which the staff identifies problems, develops countermeasures, coordinates and assists in the implementation and then evaluates the effectiveness of a particular program.

The other area in which we function is through the Accident Information System or AIS.

When the Traffic Safety Coordinating Committee was organized it was recognized that an essential part of the project would be the development of a computerized accident information system to provide accurate, detailed and timely information on accidents taking place within Shelby County. This information would be used to identify traffic safety problems and to evaluate the success of countermeasures implemented to solve the identified problems.

As a preliminary step, to gain insight as quickly as possible into the nature of traffic safety problems in Memphis and Shelby County, the Historical Accident Information System was developed. All traffic accident reports from law enforcement agencies operating within Shelby County for 1970 were punched into cards, and a series of reports produced on a computer. These reports provided valuable information about the accident "patterns" in Memphis and Shelby County, and as a result several countermeasures were proposed and implemented. Data from the 1971 accident reports was subsequently processed in the same manner and reports developed. In order to provide more comprehensive and timely analysis of accident data on an on-going basis, the Accident Information System was developed and implemented.
At the beginning of the Project, it was clear that a major factor in designing the AIS would be the development of a standard accident report form to be used by all law enforcement agencies operating within Shelby County, including the State Highway Patrol, to provide uniform data entry to the system. The state Department of Safety was, at that time, designing a uniform traffic accident report form to be used throughout the State of Tennessee. The TSCC staff and member agencies provided valuable assistance to the Department of Safety in determining the data elements to be included on the form. In addition, the new form was field tested for several weeks by the Memphis Police Department, the Shelby County Sheriff's Department and a division of the Tennessee Highway Patrol to determine the operational feasibility of the form. As a result of the test several improvements in the form were made and the report was accepted by the law enforcement agencies. The Accident Information System was then designed with the revised form as the standard input data source.

Based on numerous interviews with the various member agencies to define their information requirements, and on the experience gained in developing the Historical Accident Information System, a set of reports was tentatively designed which would satisfy these requirements. Each agency was given the opportunity to review the proposed reports and as a result a number of modifications were made and additional reports were designed. After the TSCC voted as a group to accept the proposed reports, systems design was finalized and programs written to implement the system.

OBJECTIVES AND KEY CONCEPTS

The basic objective of the Accident Information System (AIS) is to furnish the TSCC staff and participating agencies with the data necessary to plan and implement continuing constructive action to reduce the incidence of traffic accidents, injuries and fatalities. More specifically, the AIS objectives are to enable the TSCC to:
Identify traffic safety problems by location, time of day, contributing factors and other specific factors.

Make special analyses to identify and quantify traffic accident causative factors.

Evaluate objectively the effectiveness of various countermeasures formulated to reduce traffic safety problems.

The necessary data base to fulfill these objectives is built and maintained by transcribing into a computer record most of the significant information captured on the uniform statewide accident report form. From this data base are generated a series of monthly and semi-annual accident reports and analyses. A study of these reports will indicate problem areas, and special computer summaries will be run to intensively analyze the accident data. When problems are identified with sufficient precision, various countermeasures are developed and selected, in accordance with the procedures outlined by the Cooperative Management System. After countermeasures are approved and implemented, they are then evaluated through a study of the relevant data from the AIS to determine their effectiveness in reducing traffic accidents, injuries and fatalities.

SYSTEM DESCRIPTION

The Accident Information System functions in three different areas: law enforcement agencies, the TSDD staff and the Shelby County Data Processing Department. To understand the system, it is necessary to look at the processing which takes place in each area. The manual procedures which take place in the law enforcement agencies and the TSDD staff are a vital part of the system, since the completeness and accuracy of the data entering the computer system are controlled at these points.

Law Enforcement Agencies

Each of the law enforcement agencies with Shelby County now uses the State of Tennessee Uniform Accident Report Form to record the pertinent facts on each accident which they investigate. The form is the "check-off" type where possible, to enable the maximum amount of data to be
recorded in a reasonable time. Instructions for filling out the report were prepared by the TSSC staff to help insure uniform data coding by each agency.

The reports are processed manually through the Records Section of each agency the following day, and a copy sent to the TSSC staff for further handling and for forwarding to the Tennessee Department of Safety in Nashville.

TSSC Staff

The manual processing of each accident report by the TSSC staff is the key to the integrity of the system, in terms of quality control. Each report is assigned a sequential report number and examined carefully for completeness and consistency of data elements. If the form has been filled out incompletely or incorrectly, the submitting agency is contacted and corrections made. The data on the report is then transcribed to a form which is more suitable for keypunching, and a number of codes which are essential for computer processing are assigned by the TSSC staff member. For example, a numeric intersection code is entered for each report, to enable accidents to be correlated by geographic location. (The coding structure used is the Dual Independent Mapping Encoding (DIME) system developed by the Bureau of the Census and maintained locally by the Memphis and Shelby County Planning Commission.)

The completed coding forms are then keypunched and verified. The data is then run through the daily edit computer program, which edits each data field for accuracy and consistency with other data fields, and prepares a listing of the data entered on each report, with error comments if appropriate, to be used by the TSSC staff to determine that all data has been entered correctly into the system. If errors occur, they are corrected and the data is resubmitted for processing the next day. A number of numeric controls similar to accounting controls over dollar figures, are used to help insure that all reports have been processed, and that key numeric information has been entered cor-
rectly, such as the number of injuries and accidents.

At the end of the month, an attempt is made to obtain all accident reports from the law enforcement agencies, final error corrections and updates on previously submitted data are made through maintenance programs, and monthly reports are produced for distribution to the appropriate agencies. These reports are generally available about the eighth day of each month.

Shelby County Data Processing Department

All computer processing and data control activities are performed by the Shelby County Data Processing Department (SCDP). On a daily basis, all reports are keypunched, submitted and processed through the edit program. The edit listings are returned to the TSCC for data control, as described in the previous section.

At month end, the SCDP runs maintenance programs to insure the correctness of the data previously submitted, and then runs a series of programs at the request of the TSCC staff to produce the monthly accident report analyses.

Computer Data Base

There are two basic master files in the AIS and reports are produced from each file. The major data file in the system is the Accident Master File; the other data file, the Intersection Master File, is used in support of the Accident Master File.

1. Accident Master File

The Accident Master File contains one data record for each accident which has occurred during the current year. The unique identifying key in each data record is the Intersection number-Report number; the Intersection number identifies the geographic location of the accident and the Report number is the sequential number assigned to each report for control purposes by the TSCC.

The Accident Master File actually consists of two separate data files:

a. Year-to-Date accidents (including current month)

b. Monthly accidents (current month only)
2. Intersection Master File

The Intersection Master File provides a common data base for intersection-related information and statistics. Each month the Year-to-Date accidents file is processed against the Intersection Master File to update the accident statistics for each intersection. As each accident is edited, it is matched against the Intersection Master File to:

a. Validate the intersection number which was manually assigned to the accident. This validation only insures that the number assigned is in fact an existing number. To insure that the correct intersection number was assigned, the street names from the Intersection Master File are printed on the daily edit listing and visually checked by the TSCC staff against the street names on the accident report.

b. Add data concerning the intersection to the accident record for use in analyzing the accident data by type of intersection.

The Intersection Master Data File is maintained by information originating in the offices of the City and County Traffic Engineers. However, like accident data, this information is transmitted to the computer center via the TSCC, to maintain control.

CRITIQUE

A well designed accident information system is required to effectively impact traffic safety problems. The AIS designed and implemented by Shelby County Data Processing and TSCC is operating very smoothly, and is invaluable to the primary objectives of the TSCC to reduce traffic fatalities, injuries and property damage, through cooperative inter-agency efforts.

One aspect of operation of the AIS has been modified, for meeting one-time special report requests. The original concept was to use a report generator software package which would allow the TSCC staff to obtain such reports or analyses without data processing technical assistance. However, this approach simply did not work. With only two major files forming the AIS data base, conventional programs can be developed very quickly to satisfy these special report requests. Shelby County Data
Processing has been very responsive to all such requests, and the cost has been minimal.

Some of the users of the AIS are:

Metro Law Enforcement Planning Agency uses the printouts to develop a monthly traffic analysis for all law enforcement agencies to assist them in enforcement planning.

Engineers and Planning Commission are using reports to substantiate many of their programs.

National Safety Council and other educational agencies use reports for basis of educational programs.

News media uses the information to inform the public of existing problems.

Monthly we distribute sets of computer printouts to approximately twenty individuals, including the Mayor.

As countermeasure programs are being implemented, it is increasingly clear that expansion of the reporting system data base is needed. Links to such data as traffic citations, emergency room reports, and motor vehicle registration files were provided for, but processing programs have not been developed.

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Editor's note: Ronald Marshak distributed the following forms and reports at the Forum:

- Accident Information System Flowchart
- Officer's Accident Report
- Accident Coding Form
- High Accident Intersections
- Accident Summary by Hours
- Type Crash-Driver Summary
- Type Crash-Type Vehicle
- Type Crash-Crash Severity
- Contributing Factors by Time of Day
These and other samples of the work of the Memphis and Shelby County Traffic Safety Coordinating Committee may be obtained by contacting Ronald Marshak, Director.

Samuel J. Mayo, Project Manager
Office of Traffic Records Programs
Washington Department of Motor Vehicles

ADMINISTRATION OF STATE & LOCAL TRAFFIC RECORDS SYSTEMS

Today in Washington State we are at the point of implementing a local government traffic records system. We are one month away from completing the state level Traffic Records Systems design and in January of 1975 we will have a partially implemented but fully designed state-wide integrated traffic records system.

We feel that the rapid development of the Washington State Traffic Records System is due largely to the traffic safety organization that has been developed within the State.

The Traffic Safety Commission is where it all starts. The commission is chaired by the Governor and is made up of state agency directors and representatives from county and city government as well as the Judiciary. The state agencies represented are Public Instruction, Motor Vehicles, Highways, State Patrol and Social and Health Services. Oddly enough, these are the agencies charged with the responsibility for implementation of the highway safety standards.

The commission receives technical guidance from the Technical Advisory Committee. This committee is comprised of experts in those disciplines which are critical to traffic safety.

The Governor's Highway Safety Representative serves as the Director of the Traffic Safety Commission and has the responsibility for the administration of all the traffic safety standards.

The Traffic Safety Commission has appointed a Traffic Records Committee consisting of representatives from the Department of Motor Vehicles, the Washington State Patrol and the Department of Highways, the Depart-
ment of Motor Vehicles has been designated as the official traffic records agency for the State.

Within the Department of Motor Vehicles there is an Office of Traffic Records Programs responsible for the planning, development and implementation of the TRS.

The Office of Traffic Records Programs resides in the Information Systems or data processing group and relies heavily upon automatic data processing for development and implementation of the System.

The basic philosophy of traffic records administration within the State is built around the belief that you must plan the work and then, and only then, work the plan.

As an example, the first activity funded by the federal government for Traffic Records in Washington was a study to determine the resources and constraints relating to the development of a Traffic Records System. This study proved to be invaluable as the system was developed. We became familiar with all aspects of the current traffic safety data situation.

This study essentially developed recommendations which became the basis for the planning and administrative activities that would take place as the system was developed.

The general recommendations are:

- The implementation of an Integrated Traffic Records System in the State of Washington should be adopted as an objective of the present administration. This means that traffic records will be considered and become a part of the operational functions of the Traffic Safety agencies. It will not remain outside or become just another federal project. In this way, system enhancement and growth are ensured as agencies grow.

Another recommendation is:

- At the state government level, the system should be implemented as a set of operationally based sub-systems designed and operated by the agencies directly concerned with their content.
Nearly all traffic safety agencies in the state are highly automated and to believe that these agencies would give up operational data bases to a central Traffic Records agency is frivolous. The agency responsible for the data base will retain control and traffic record needs will be incorporated where necessary. Also, this recommendation is where we first see a state level concept called out.

A third recommendation is:

- At the local government level, the system should be implemented as a set of locally controlled sub-systems developed in conformance with a common set of guidelines and plans, developed with local participation, and published by the state.

Here we see the local government concept for the system. We leave operational control at the local level for flexibility and the almost constant need for locals to react to "emergency" situations. We see the need for common guidelines to ensure that a maximum level of commonality exists.

The fourth and final recommendation is:

- One state agency should have responsibility for:
  - Overall coordination and planning of the implementation.
  - Development and publication of coordinated guidelines and plans for local government sub-systems.
  - Design and implementation of a sub-system to provide interfaces between the various operational sub-systems and access to the data they contain.

Naturally, this responsibility falls to the traffic records agency, Department of Motor Vehicles.

I think we can all see the administrative framework that is developing from these recommendations.
Traffic records planning and implementation will have an impact on all traffic safety agencies in the state as well as city and county governments. The scope of this project clearly demands that rigorous review and approval controls be established. Let's take a look at the administrative controls in use to ensure the development of an optimum system. Let's use an actual example, the development of a "Model Local Government Traffic Records System Master Plan", that is the planning and detail system design phase of recommendation 2.

The master plan concept was conceived and documented in the OTHP. The first review cycle was with the director of the OTHP. After his approval was received the plan was presented to the Traffic Records Committee for review and approval. Upon acceptance by the Traffic Records Committee the plan became a grant request by means of incorporating the project as an annual highway safety sub-element plan for traffic records and was submitted to the Traffic Safety Commission office for approval. After receiving approval, the plan was presented to the Technical Advisory Committee and from there on to the Traffic Safety Commission. Ultimately, project approval and funding was accomplished and the project had been reviewed and changes incorporated at almost every level. This is the typical Traffic Records System project approval cycle that takes place. We feel that this cycle is especially valuable in that everyone, from the Traffic Records Analyst in OTHP, to the Governor of the State has an opportunity for review and can stay abreast of traffic safety developments as they are planned.

I've talked of the traffic safety organizations within the State, the basic study recommendations, and the project review and approval cycles, now let's address the traffic records system development.

In 1972, the Office of Traffic Records Programs conducted a study to assess the resources and constraints regarding the development of an Integrated Traffic Records System.

Personnel from OTHP conducted the study which was funded by a $75,000 grant under METSA Standard 310. The study was organized into three phases.
Present System Investigation -

First, we contacted as many participants in the existing system as possible. We inventoried these systems to determine their purpose, scope, functions, and the data they handle. The findings were documented and published.

Proposal Development -

The results of the investigation in phase one indicated that an improved system was feasible, therefore, the proposal development phase was entered into. During this phase, the major contributors to today's system were consulted, and their advice and council sought. The system proposal was documented and published.

Final Report -

The final phase of the study resulted in a report to the federal government on the activities of the Traffic Records Program, and the findings and recommendations that resulted.

The need for improvement identified by the feasibility study fell into two areas, state and local.

Although many of the state level systems reflect a high degree of sophistication, they generally lack the necessary coordination between them, and therefore, are quite fragmented. A high degree of data redundancy is found in the many data files contained within these systems as a result of this lack of coordination. Additionally, it was found that much of the data required by a comprehensive traffic records system was not yet fully automated.

A significant point to be made about the existing state level system is that it provides too little support for local level systems. In return, not only do the local level systems suffer from the same problems of fragmented systems and data redundancy, but a great deal of data is processed manually.
Another major problem faced by local governments has been the lack of standards for use in designing and operating traffic records systems.

A two phase plan was devised to deal with the problem.

The plan initially consisted of developing a Local Level TES Design, and a State Level TES Design that included the proper interface, or bridge between the two systems.

Considerable manpower and expertise were required to accomplish the design work, especially in the relatively short time frame desired.

Since development of the design was to be project oriented, and there was no guarantee as to when implementation would begin, it was decided that outside consulting should be considered to accomplish the design work. This approach allowed us to avoid maintaining a permanent staff larger than required over the long term.

The problem definition was documented in the form of a Request for Proposal which included extensive provisions for contract management and control.

Finally, a consultant was selected from a field of four firms demonstrating substantial experience in TES development. The first requirement of the consultant was development of a work plan, in the form of a detailed network diagram, delineating the activities required to develop the design. A series of checkpoints were identified in the work plan to provide the OTEP, the TBC, the TSC and local governments with a means of monitoring the development process.

During Phase I, we focused our attention at the local level, since it was the area where the greatest benefit could be gained, in the shortest time, for the least expense.

The local design was developed jointly by personnel from the OTEP and a consultant. The project was funded under NHTSA Standard 310 in the amount of $80,000 and was completed in July 1974.
Although the project was the responsibility of a state agency, the system was designed for local governments and included a great deal of participation on their part.

Development was organized into the following four phases, Current Systems Survey, Functions and Objectives, Conceptual Design, and Detail Design. Completion of each phase resulted in publication of a formal deliverable, or manual, each of which was reviewed and approved by the OTEP director and the Traffic Records Committee.

Copies of the four manuals were distributed to the Traffic Safety Coordinators in the eighteen cities and counties visited during the Current Systems Survey, and their comments and suggestions were solicited prior to continuing with the next phase.

The recently completed local level design provides political subdivisions with guidelines for use in development of local traffic records systems.

Development of the local design established the necessary standardization for local TBS development, and avoided the problem of repeatedly funding the same, or similar, local designs. However, local governments are currently faced with funding the implementation of the design at a time when local budgets are being reduced.

For this reason, the OTEP has committed itself to implementation of the local TBS design in a pilot site. Implementation will be done by OTEP personnel with a $130,000 grant funded under NHTEA, Standard 310 and is scheduled for completion in October 1975.

A significant outcome of pilot implementation will be the establishment of a "transferrable TBS package" that will be made available to political sub-divisions upon completion.

As a result, use of the transferrable package will greatly reduce implementation costs at the local level.

It is important to note that the package allows for standardized local systems to be integrated into a statewide Traffic Records System.
This brings us back to Phase II, Development of a State Level Traffic Records System Design.

Until recently, development of the State Level Design had been delayed, since our efforts had been spent enhancing the local systems.

The contract between the OTRP and the consultant for development of the Local TRS Design was amended to include the Design of a State Level Traffic Records System. This approach has been quite satisfactory from the standpoint of retaining the same consulting firm since their personnel were intimately familiar with development of the local design. Start-up time on the part of the consultant was held to a minimum and a great deal of continuity was carried over from the local design.

The amended contract was funded under NHTSA, Standard 310 in the amount of $60,000, and the state design is scheduled for completion in December 1974.

Additionally, D.M.V. is presently working to integrate their Vehicle & Driver Data Sub-Systems. This will tie together the majority of traffic safety data which is resident in the D.M.V. files, as well as provide linkages to the balance of data in externally located files.

Implementation of the state level design, built on the data base concept developed in D.M.V., and compatible with local traffic records systems is the goal we are working towards.

To give this traffic records goal a little more visibility and to react to the governor's demand for results, we prepared, by county, a statewide seat belt report that showed the number of occupants in passenger vehicles which were involved in traffic crashes for the calendar year 1973. We distributed the information to each county, thereby providing county officials and county civic and service organizations with the number of persons who were not belted and were killed along with the number of lives that could have potentially been saved by using seat belts.

We felt this would allow the individual to relate to the problem in his community and to see some meaningful traffic records activity at an early date.
In summary, I would like to emphasize one point. Washington will have a totally integrated Statewide Traffic Records System that will be the product of the efforts of all the people we contact and communicate with; whether they are participants in today’s systems, or potential participants in future systems.

Bob Smith, Commander  
Planning and Analysis Division  
California Highway Patrol

A STATEWIDE AND SUCCESSFUL  
INTEGRATED TRAFFIC RECORDS SYSTEM

This afternoon we have heard some very interesting descriptions of state and local traffic records systems. I trust my contribution will also be informative and enlightening. I am going to talk about the California Statewide Integrated Traffic Records System (SWITRS) which is administered by the California Highway Patrol. As Commander of the Planning and Analysis Division of that Department, I am responsible for the maintenance of a system which processes nearly one-half million traffic records per year submitted by 90 local offices of the Highway Patrol and 409 cities.

Our statewide record system, as did many other states’ record systems, resulted from Public Law 89-564 which established the National Highway Safety Program. It took this type of emphasis to get the ball rolling.

Prior to the implementation of the California Statewide Integrated Traffic Records System in 1972, some major problems existed with the then existing system which are worth mentioning here.

1. Approximately 200 different collision report formats were in use and submitted to the California Highway Patrol accident processing system. The conversion of accident report data to a standardized coding sheet was required for each of these reports prior to processing. The California Highway Patrol was mandated by law to collect and process statistics on all fatal and injury accidents occurring in the State.
2. Numerous variations existed amongst local and State agencies in the definition of data elements, causing confusion in the data accumulation process.
3. Inconsistent policies related to accident reporting itself made the basic data suspect in some instances.
4. Only fatal and injury accident reports from cities were processed by the California Highway Patrol. Property damage only accident reports were not processed.
5. Only the larger cities and counties had access to computers for producing accident output reports. Medium and small-sized cities were usually forced to hand-tally the data they needed.

In addition to the five problems just cited which were largely logistical, we also experienced qualitative problems. For example: There was the redundant processing of accident report data to satisfy the unique needs of each user - the highway engineer, the driver improvement analyst, and the law enforcement administrator.

The California Department of Transportation highway engineer required location data on accidents occurring on the State highway which was specific to within a distance of 50 feet. They also classify the movement of involved vehicles by initial harmful impact and then by subsequent harmful impacts. The engineer needed information related to the potential for making engineering improvements.

The Department of Motor Vehicles required driver identification data to maintain their driver record file, provide specific information to driver improvement analysts, and to maintain the validity of the State's financial responsibility program.

Finally, my own agency, the Highway Patrol, needed specific information processed in such a way that it was: Useful in the tactical deployment of manpower; useful in accident analysis; and adequate to meet the requirement of publishing an annual report of fatal and injury accidents for the State of California.
A second major qualitative problem was the inability to compare data for jurisdictions of similar size. A manager should have been able to evaluate his traffic safety problems and programs by comparison with the experience of similar jurisdictions.

Finally, the lack of complete reporting and oftentimes the lack of accurate data compounded the problem of making solid decisions on the effective use of management resources.

With all those problems facing us, it was obvious that a new system demanded a Statewide perspective. Thus in November 1967, the California Highway Patrol was designated by the Secretary of the California Business and Transportation Agency as the coordinating department for preparation of a highway safety project grant application, aimed at ultimate development of a system which would be in compliance with Standard 4.4.10.

A grant application for National Highway Transportation Safety Administration funds for system design was prepared by the Highway Patrol and approved by the California Office of Traffic Safety in July 1968. The grant period ran from June 30, 1968 to June 30, 1970. Expenditures during this period involved $270,000 in Federal funds and $185,000 in State funds.

To ensure a truly Statewide system, an Advisory Committee for the development of the SMITRS was established late in 1968. The members represented the California Highway Patrol, the Department of Motor Vehicles, the Department of Public Works (now the California Department of Transportation), the League of California Cities and the County Supervisors Association of California. The Committee reported to the Commissioner of the California Highway Patrol.

In May 1969, the consulting firm of Arthur Young and Company was awarded the contract to develop the Statewide record system design. The first task involved determining the status of existing traffic records systems in California and then to develop a data dictionary.
then necessary to isolate the needs of all users and the last task to present a logical useable system design.

The participation of organizations such as the California Highway Safety Organization, and California Peace Officers' Association, in addition to the original design group, permitted a systems design from the bottom up rather than one imposed from the Federal or State level.

Several important assumptions were made in structuring the design of the system. Initially, it was determined that definitions in SWITRS should meet California needs. This resulted in several deviations from the 1970 Manual on Classification of Motor Vehicle Traffic Accidents published by the National Safety Council. This involved the definitions of: Complaint of pain injury, detailed vehicle damage, location of accident, intersection, traffic way, bicycles and noncontact vehicles.

A second assumption was that the system should collect only that information essential for day-to-day operation. Information needed to answer specialized requests could be obtained on a sampling basis, as needed. This resulted in some 44 data elements, included on the prior accident report form, being dropped from the new format. Savings of this magnitude are obvious.

A third assumption was that voluntary participation would decrease the resistance of local jurisdictions to the new system. Thus, it was decided to implement the system without legislation which required participation.

A fourth assumption stated that there should be a difference between accident reporting and accident investigation. Although the design of the uniform collision report form required a clear distinction between an investigation and a report, the same form was designed to accommodate either course of action. A completion of only the report form for a minor accident constituted a report of an accident. The completion of the same report form with supplemental information for fatal accidents and major injury accidents constituted an investigation.

This is not a complete definition but is indicative of the flexibility of the system.
In early 1970, the proposed system design was approved for implementation. In October 1970, a grant for the system implementation was approved by the Office of Traffic Safety. This included $405,000 in federal funds and $277,000 in state funds.

In 1971 the system implementation design was accepted from the contractor on a phased basis with affected users signing off for various portions.

After it had been determined that a Statewide Integrated Traffic Record System would be implemented, training courses on the use of the system were conducted for personnel of the Highway Patrol, local police agencies, and traffic engineers at both the State and local level. The training was conducted by the SWITHS contractor in 23 regional seminars. Of 348 potential local police department users, 296 sent representatives.

Local jurisdictions found it advantageous to adopt the uniform collision reporting system, because by so doing, they were guaranteed periodic statistical output compilations at no charge, a free supply of reporting manual for training relating to preparation, and use of the new report form, plus consultation on accident reporting matters as needed.

Some cities, because of local needs, could not adopt the collision reporting form as designed even though the form was provided free. Therefore, provisions were made for 16 cities to use a modified form and still remain within the system.

Today only two cities in the State, unfortunately they also happen to be our largest ones, Los Angeles and San Diego, remain uncommitted to using our designed form or an approved modified version. They both however, do submit copies of all their investigations to us like the other cities do. Because of their electronic data processing capabilities, the biggest advantage of the system, the quarterly output reports were not an advantage to them.

We continue to negotiate with both cities regarding an acceptable form design and feel that shortly both cities will be full participants.
The input into the SWITRS at the Highway Patrol comes from the local police departments and the CHP field offices. From the SWITRS comes different data for different uses and users.

To operate the SWITRS requires 24 coders of which 12 are dedicated to coding the nonuniform reports from the cities of Los Angeles and San Diego. You can see why we are anxious to have them use a standardized reporting form. In addition, to allow us to process the approximately 1,400 accident reports per day requires 25 key data operators using 25 key data stations.

The key data system we are presently using was installed about three months ago. This system allows us to go directly from the accident report to disk to tape. Prior to this installation, we were using the conventional system of going from document to card to tape. I feel this key data system is a significant step forward because of the additional control and accuracy we are able to gain over the system. In addition, the changeover results in a significant dollar savings of between $20,000 and $30,000 per year.

The Department of Motor Vehicles receives weekly magnetic tapes from the system with driver and collision data. This eliminates redundant processing of collision data. Coordinators within the Department of Motor Vehicles and the Highway Patrol resolve problems with the system and devise improvements.

The California Department of Transportation (CALTRANS) receives State highway collision data on weekly magnetic tapes from the SWITRS. This data, which includes collision location by milepost, is entered into their traffic accident surveillance and analysis system (TASAS). Computer reports are then produced for the 11 CALTRANS districts by CALTRANS.

Many local agencies in California now rely on the Statewide System completely for accident data. They include city police departments, county sheriff's departments with city contracts, city and county
public works departments, and other public and private users of traffic records data.

The systems output for the local agencies includes four quarterly computer reports which are provided to police agencies and city and county public works departments. The reports include:

1. The total information about each accident by intersection, crossroad or other identifiers. It is a computerized pin map.
2. Hourly and daily distribution of all collisions. This report summarizes the collisions by hour of day and by day of week.
3. Primary collision factor report. This report allows the administrator to look at severity by 19 different collision factors.
4. Involved party category report. This report shows accident and victim information by type of involvement.

Many local jurisdictions and many funded projects such as the Alcohol Safety Action Project have requested and received accident data for specific locations or for conditions involving particular violations. Charges are made for these requests but only for the actual cost of programming and running the special reports. A generalized retrieval program (GRP) which is fast and relatively inexpensive, has been developed to handle most one-time requests.

The minimum cost for a generalized retrieval program run is $25.00 per report, with a base cost of $5.00 per 1,000 accidents in the report.

To produce other types of statistical tables on a continuing basis, there is a one-time $200 programming and procedure set-up charge. In addition, a monthly charge of $250 is levied to cover the costs of selecting and producing the tables. This charge can be shared equally by requesters of identical reports. There is an additional charge of $5 per 1,000 accidents in the report, with a $15 minimum per report.

Finally, the system produces 14 semi-annual reports for each participating city to furnish to the National Safety Council. The first MSC reports were provided the cities in 1972.
The Statewide Integrated Traffic Record System was designed to be dynamic. As users needs have changed, the system has changed. For example, private property accidents were being processed by the system in 1972. Because such collisions are not conducive to corrective measures, many jurisdictions requested that they not be included on their output reports. Private property accidents are no longer processed.

It was also determined, within the Highway Patrol, that accidents reported by drivers after the fact, did not provide useful data on location or cause of the collision. These reports, called counter reports, are now filed only at the local field office and not processed in the SWITRS system.

To keep the system dynamic, user agencies are periodically surveyed for their suggestions and comments regarding the system. A questionnaire jointly completed by police and traffic engineers resulted in a determination that additional data on pedestrians, bicycles, motorcycles, and alcohol involvement were desired.

Requests from user agencies also have resulted in the current programming of four additional quarterly output reports. Similar reports now are proposed for Departmental Field Commanders who have not in the past received SWITRS output.

As a special note, the Highway Patrol produces 31 separate reports for our own management use.

We have found the Statewide Integrated Traffic Records System to be particularly valuable in conducting special studies. More recent examples include:

1. A bicycle study, an analysis of the CHP bicycle enforcement program effectiveness. This study involved the basic SWITRS system with the sampling option to obtain additional information. We found that as the result of the Department's bicycle enforcement program the bicycle accidents decreased. This was in the face of an increase in bicycle accidents within the cities. Statewide, as a result of the bicycle enforcement
program and other continuing efforts, 1973 bicycle accidents in California numbered only 10,335 which was 2,900 below the four-year trend line.

2. Accident changes under energy crisis, a unique analysis of the impact of the 55 MPH limit on traffic collisions. This study utilized the basic SWIBS system supplemented by non-accident data from other California State Agencies. It was found that of the 36.9% decrease in traffic fatalities in California during the first three months of 1974, the 55 MPH speed limit and the reduced travel contributed almost equally.

3. Small car study, which evaluated the accident and injury exposure of small cars vs. large cars. This study used the SWIBS system with the studies previously conducted on small cars. It reverified the findings that small car occupants are injured more frequently and more severely than large car occupants. The most significant finding, however, was that increased usage of seat belts by small car occupants could prevent the National trend to small car ownership from causing an overall increased injury risk.

All the excellent usable outputs of the system did not come easily, however. During the first year of systems operation there was a mismatch of approximately 20% between the records of the SWIBS and the CALTRANS TASAS. This was caused by dual entry of State Highway Accident information in both the SWIBS and the CALTRANS (TASAS). It was necessary to match the TASAS record against the data provided from the SWIBS. This was done on a 19 digit identifier. Through this match, we also discovered that the routing of the reports resulted in a different set of reports arriving to SWIBS than to TASAS. An entire new procedure was developed to overcome this problem.

Ironing out this SWIBS-TASAS bug is just one example of the coordinative effort expended to solve problems. In fact, coordination between the SWIBS and user agencies is now maintained by a staff of three individuals in the Highway Patrol Analysis Section.
As a look to the future, we are preparing to update local law enforcement agencies as well as our own personnel in the preparation of collision reports and to offer assistance to the local agencies in interpreting output reports.

On the drawing board is a monthly SWITRS bulletin which should increase communications between the local agencies and the SWITRS system.

For the first time we are seriously contemplating the processing of magnetic tape information from local agencies instead of the hard copy and returning magnetic tape to local agencies rather than published reports which obviously presents new problems, particularly for the smaller local agencies in acquiring the soft and hardware for such a venture.

In conclusion, I think the genius of the SWITRS is its flexibility. Obviously, we have to work at maintaining that flexibility.

We believe the California system can be judged a success, partly because it has achieved goals on a purely voluntary basis—which we believe to be a first in the United States.

In the vernacular of the 1970's, SWITRS is "alive and well", and most of all, responsive to users. We intend to keep it that way, and hopefully, its value to users will increase every year.

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Editor's Note: Commander Smith used colored slides to illustrate SWITRS design agencies, accident report form, SWITRS input and examples of SWITRS output. Examples of these materials may be obtained by contacting Commander Smith.
TRAFFIC RECORDS USES

Presiding Officer:

A. Brooks Griffith
Coordinator
Arkansas Office of Public Safety
Little Rock, Arkansas
THROUGH USES OF ACCIDENT RECORDS

Though state traffic accident records systems have been used for years in generating summaries of data, they have not very often been used for research.

Too often extreme opinions are voiced about using state accident data for research purposes. Some people have so much skepticism about the accuracy of police data as to deny any utility at all. Others take too seriously the accident data and are inclined to quote the findings "to the second decimal place." I think both of these positions are untenable.

My opinion is that with a lot of work—a lot of wrestling with the system—a statewide accident records system can be made to become useful for research purposes. However, the shortcomings and advantages of the data system must be learned before successful analysis can be carried out. To do this one must work steadily with the system.

There are several ingredients necessary to the system to make it useful for research. The data system in North Carolina illustrates some items that are useful in this regard. North Carolina has a standard accident report form used by all reporting agencies. Reporting is rather good in that there are no large cities that refuse to report.

There is an excellent data handling capability within the State Department of Transportation in which accident report forms from all over the state are transcribed onto magnetic tape for computer analysis.

In making these data useful for research, HSRC has worked cooperatively with the Department in adding to the standard information system certain other data variables making it useful for research. These are variables which are present on the "hard copy" of the accident report form but which are typically not computer transcribed. These include the Vehicle Identification Number of the vehicles involved, the license plate number, the
driver license number, seat belt use, an injury rating on each seated position, and the verbatim transcription of the officer’s narrative.

By incorporating the identifier numbers it is possible to cross reference and link the accident records file with other computer files.

By virtue of the Vehicle Identification Number system it becomes possible to separate the data according to various vehicle types to study safety features and accident trends associated with these vehicles.

With the computerized officer’s narrative it is possible to search out rare events which occur too seldom to warrant a particular check box on the form, but which the officer may describe in his narrative. By instructing the computer to print an alphabetic dictionary of all words used by the officers, it is possible to have the computer search the file of five million words on the basis of any search words or phrases. Using this technique it has been possible to look into quite a number of matters including an examination of whether post crash fire is more often associated with certain specific cars.

Another ingredient in the system is the use of a vehicle deformation scale. In North Carolina the Traffic Accident Data scale is in use by all the highway patrol and some of the cities. By having a rating of vehicle deformation it is possible more accurately to characterize crash severity, crash type, and the implications for passenger injury.

One of the essentials in all of this is training and feedback to the reporting officers. Through a series of traffic records workshops attempts are made to upgrade the level of reporting of some of the officers. Through a monthly news bulletin called The Accident Reporter officers get feedback, admonition, and praise, intended to make them realize that accident reporting is important and that they are a part of a critical chain of information.

Although the population of accident cases in North Carolina is rather large (nearly one quarter million accident-involved vehicles per year) nevertheless for many purposes this constitutes too small a sample. For analysis of very unusual accident configurations, or for study of
the latest model cars, such a quantity yields too small a subset of needed cases.

I would like to propose for future thinking a multi-state data base which the federal government would sponsor. For many analysis purposes an accident data base of 600,000 to 1,000,000 per year is needed. In terms of national policy decisions far too much reliance has been placed on the relatively few automobile crashes subjected to detailed investigation. The sampling criteria has changed from site to site and from year to year such that the aggregate of all cases becomes highly suspect when used to generalize national trends.

While it may be costly I think there is no alternative to a multi-state program in which comparable data is obtained on upwards of a million cases per year. What is important to note here is that by enriching and improving an existing system, this quantity of cases could be obtained with less additional monetary input than might be supposed. In any state with a decent reporting system the major costs of accident reporting and data processing are already borne by the state. What I am proposing here is a program in which additional federal funds are made available to enrich the system, to obtain additional needed data, extra personnel for timely processing and for centralization of the resulting data pool. If such a system were to come about, a much improved analysis capability could be achieved in the U. S.

Brian O'Neill
Vice President, Research
Insurance Institute for Highway Safety

THE HIGHWAY LOSS DATA INSTITUTE

Introduction

The Highway Loss Data Institute (HLDI), formed in December, 1972, is a nonprofit organization that gathers, processes and provides the public with insurance data concerned with human and economic losses resulting from highway crashes.

HLDI - the organization and its work - is the outgrowth of four factors that have converged in recent years:
1. Research evidence of very large disparities between automobile series in the amounts of human and property damage resulting from crashes.

2. The need within the insurance business for creation of a mechanism to produce reliable, timely data on the economic and human loss characteristics of individual automobile series of current and recent models.

3. Mounting pressure from government and the public for availability of specific, model-by-model loss data for new and recent-vintage automobiles, whether supplied at the discretion and within the control of insurers or drawn from their records under regulatory compulsion.

4. The adoption by most auto manufacturers of Vehicle Identification Number systems that produce, for each new car, a unique number -- a number that is coded to provide vital basic information as to the vehicle's make, model year, series and other characteristics.

HLDI is a research organization responding to the needs of insurers, the public and the government for up-to-date, reliable highway safety data about automobile loss characteristics. Reports published by HLDI:

- Are based on large volumes of computerized claim data made available to HLDI, voluntarily and at no cost, by insurers. Nine insurers presently participate in HLDI as data suppliers.
- Are available without charge to all insurance companies, regardless of size, and their organizations. They also are made available to the public and to government agencies, including the U. S. Department of Transportation.
- Provide detailed, model-by-model loss information for new and recent-year automobiles -- information that already covers collision losses and is being extended to include human death and injury loss information. Until HLDI's establishment, such information was not available to insurance companies and the public.

HLDI's operating goals include the following:
- Development of an early warning mechanism for alerting the public, the government and the insurance industry to automobiles with abnormal losses as reflected by insurance claim payments.
- Provision of information about losses (property damage and injuries) not available from other sources, which can serve the public interest.
- Provision of data that might influence auto manufacturer design decisions.

HLDI serves the public, the government and the insurance industry by making available carefully researched highway loss data. HLDI, however,
- Does not collect, process or disseminate data involving insurance rates, nor does its work involve ratemaking or premium determinations.
- Does not operate "for profit." In fact, its federal, nonprofit tax status as an exempt organization forbids it by law from operating for a profit.
- Does not provide information as to claims data of individual companies.

The membership of the board represents insurance companies that are supplying data to HLDI. Financial support for HLDI is provided by the Insurance Institute for Highway Safety, which in turn is supported by most automobile insurers either directly or through their trade associations.

Nature of Data

HLDI collects both policy and claim related collision coverage data. "Assigned risk" and fleet policies are excluded. Policy and claim data are collected from all states except Massachusetts which is excluded from the data from all of the companies.

Additional data on the number of registered passenger vehicles in specific geographic areas have been obtained from the R. L. Polk Company and the corresponding land areas have been obtained from the Rand McNally Company.
Insurance Policy Data

Insurance policy data, as distinct from claim data, describe the characteristics of an insured vehicle, including its make and series, and certain other relevant information concerning the nature of the collision coverage, the characteristics of the rated driver and the normal garaging location of the insured vehicle. Policy data collected by HLDI include the following basic information for each relevant insured vehicle:

- Vehicle Identification Number (VIN)
- Deductible Amount
- Rated Driver Characteristics
- Recorded Garaging Location
- Date and Nature of Relevant Changes in Coverage

Insurance Claim Data

Insurance claim data report the characteristics of insured vehicles for which collision coverage claims are made, the initiation of each claim and/or the corresponding payment. Claim data collected by HLDI include the following basic information:

- Vehicle Identification Number (VIN)
- Crash Date
- Loss Payment Amount

The dollar amounts represent loss payments to or on behalf of policyholders for damage to their vehicles.

Method of Data Analysis

Vehicle Description and Identification

The Vehicle Identification Numbers (VINs) of most new automobiles sold in the United States are individually unique numbers that contain, in coded form, detailed information as to each vehicle's make, model year, series and other distinguishing characteristics. Specific vehicle

1See Appendix A for definitions.
characteristics are derived by decoding the VINs of the individual automobiles.

Exposure

Exposure, in insured vehicle years, is computed for each individual vehicle from the coverage data. The total number of insured vehicle years for each vehicle series is then obtained by accumulating the exposure for all of the individual vehicles of that vehicle series.

The exposure for each vehicle series is obtained for each of the four most common combinations of deductible and operator age group, a, b, c, d, shown below:

<table>
<thead>
<tr>
<th>Deductible Amount</th>
<th>Youthful² Operator</th>
<th>No Youthful² Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>$100</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>

Claim Frequency

Both pending and paid claims for an individual vehicle are first matched with its corresponding coverage data to ensure that the crash had occurred within an appropriate period of insurance coverage for that vehicle. Claims that were settled without payment, as well as those paid even though the damage was less than the deductible amount, are excluded from the computations. In every instance in which multiple claims were made for the same crash, they are treated as a single claim in the calculations of claim frequency. All remaining claims for each vehicle series are used, together with the corresponding exposure, to compute the claim frequency: the number of claims per 100 insured vehicle years.

For each vehicle series, claim frequencies are computed for each of the four combinations of deductible and operator age group, a, b, c, d, shown above.
Average Loss Payment

Paid claims for each vehicle series are used to compute its average loss payment per claim. They are summed and divided by the number of claims to produce the average loss payment per claim. Claims that were settled without payment, as well as those paid even though the damage was less than the deductible amount, are excluded from the computations. In every instance in which multiple claims and/or multiple payments were made for the same crash, they are treated as a single claim and/or a single payment in the calculation of average loss payment.

Average loss payments are also obtained for each combination of the two principal deductible amounts and the two operator age groups.

Average Loss Payment per Insured Vehicle Year

The average loss payment per insured vehicle year for each vehicle series is obtained by multiplying the claim frequency per 100 insured vehicle years by the average loss payment, and dividing the result by one hundred.

Average loss payments per insured vehicle year are also obtained for each combination of deductible amount and operator age group.

Standardization

It is well known that loss experience can vary substantially in relation to certain non-vehicle factors. As anticipated, the ELDI data have shown that two important such factors are the deductible amount of the coverage and the operator age group, and that both claim frequency and average loss payment vary with these factors.

The relative mixes of these two factors were found to vary considerably among the various specific vehicle series -- so considerably that they could distort comparisons of results between the series if not taken appropriately into account in calculating the results.

In the case of the operator age group factor, youthful operators generally generate higher insurance losses than older drivers. Thus, if compared vehicle series have different proportions of youthful
operators, this difference, if not taken into consideration, might be sufficient to bias the comparison.

Results obtained from the two deductible categories, $50 and $100, also vary. For example, $50 deductible claim frequencies are higher than $100 deductible claim frequencies. Thus, again if compared vehicle series have different proportions of $50 deductible coverages, as many series do, this difference, if not taken into consideration, might also be sufficient to bias the comparison.

It, therefore, is necessary to isolate the effects of these two non-vehicle factors -- deductible amount and operator age group -- for each series. Then, using the values shown in the figure below, the results in each series are weighted in order to produce a standard distribution of these factors in each and every vehicle series.

This standardization procedure is widely used in vital health statistics. In the method employed, the results for each make and series are standardized to the same mix, or distribution, of exposure for each combination of deductible amount and operator age group. The procedure uses the actual results for each combination of deductible amount and operator age group to compute a weighted average of the claim frequencies and the average loss payments.

Since the same weights are used for each make and series, the effects due to the non-vehicle factors -- deductible amount and operator age group -- are present in equal amounts in the standardized results for each make and series. Therefore, to the extent that the age distributions within each operator age group do not vary substantially for different series, these effects can no longer bias the results between vehicle series.

The basic principle of this standardization procedure is the introduction of a standard distribution of exposure for each of these non-vehicle factors.

The standardization weights were chosen to be approximately equivalent to the mix of exposure observed for each of the combinations of de-
ductible and operator age group. The actual values used are given below:

<table>
<thead>
<tr>
<th>Deductible</th>
<th>Youthful Operator</th>
<th>No Youthful Operator</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50</td>
<td>0.05</td>
<td>0.35</td>
<td>0.40</td>
</tr>
<tr>
<td>$100</td>
<td>0.15</td>
<td>0.45</td>
<td>0.60</td>
</tr>
<tr>
<td>Combined</td>
<td>0.20</td>
<td>0.80</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Results

To date HLDTI has produced six research reports; these include detailed results on the loss experience of almost 200 individual 1972 and 1973 vehicle series, initial results for over 20 of the more popular 1974 vehicle series, a detailed comparison of 1972 and 1973 model losses, and the development of relationships between losses and vehicle density.

Early next month a more comprehensive report on the loss experience of the 1974 models during their first year of operation will be published.

Important findings contained in these first reports include the following:

- Confirmation of the wide variations between individual vehicle series in both the frequency and the size of crash damage losses.
- Within market classes there is considerable variation in the results for individual vehicle series indicating that, even among vehicles intended to serve the same market segments, there are substantial variations in the losses.
- Sub compacts have the highest and full size models the lowest collision claim frequencies among the four major market classes -- sub compacts, compacts, intermediates and full size models.
- 1973 model cars are generating substantially fewer collision claims than corresponding 1972 models, but these gains are being partially offset by increases in the average loss payment per claim.
- There is a consistent increase in the level of collision coverage claim frequency as vehicle density increases, with a dramatic increase in frequency levels in large metropolitan areas with the highest vehicle density.

- 94 -
There is a relatively consistent decrease in the average loss payment size as the vehicle density increases.

These are brief summaries of some of the findings of HLDI research; much more detailed results are to be found in the actual published reports. These complete reports can be obtained at no charge by writing to HLDI, Watergate 600, Washington, D.C. 20037.

Reports published by the Highway Loss Data Institute are:


APPENDIX A

DEFINITIONS

Average Loss Payment per Claim - The total of all loss payments made for the claims for a group of vehicles, divided by the number of claims paid; expressed as dollars per claim.

Average Loss Payment per Insured Vehicle Year - For a group of vehicles, the product of Claim Frequency and Average Loss Payment per claim, divided by 100; expressed as dollars per insured vehicle year. It should be noted that this definition differs from the commonly used insurance term, pure premium, but yields similar results.
Claim Frequency - The number of claims for a group of vehicles, divided by the exposure for that group; expressed as claims per one hundred insured vehicle-years.

Collision Coverages - As defined in insurance contracts, the coverage under which people insure their own car against loss caused by collision.

Deductible Amount - That portion of the collision damage cost borne by the policyholder. For collision coverage, the most common deductible amounts are $50 and $100.

Exposure - The time interval an individual vehicle is insured. Exposure for a group of vehicles is expressed in units of insured vehicle years.

Loss Payment - That portion of the collision damage cost borne by the insurer; in general, the total collision damage cost minus the deductible amount.

Market Class - A grouping of vehicle series with similar size and other characteristics.

Operator Age Group - The factor distinguishing between those vehicles whose rated driver is youthful and those vehicles whose rated driver is not youthful (see youthful operator).

Rated Driver - The driver who, for insurance purposes, is considered to represent the greatest loss potential for the insured automobile.

Vehicle Identification Number (VIN) - A code, variously comprising both numbers and letters; normally of between 8 and 13 characters in length, assigned to each automobile by its manufacturer. The VIN uniquely identifies the vehicle within at least a ten-year time span, and in recent model year vehicles, almost always contains coding which identifies the make, series, model year, and other characteristics of each vehicle.

Vehicle Series - A name denoting a family of vehicles, within a make, with the same wheelbase and a degree of commonality in construction such as body, chassis, etc.

Youthful Operator - For the purposes of this report, all males (married or single) under 25 years of age and all unmarried females under 25 years of age are classified as youthful.
TRAFFIC RECORDS FOR ANNUAL WORK PLANS

Brooks requested that I attempt to place the use of Traffic Records for Annual Work Plans in the proper perspective as we see it in Arkansas.

Those of us who have the opportunity to teach students frequently find that we learn far more than we impart. I will never forget the student, who at mid-term, taught me about placing things in their proper perspective. It was done so well that I don't think she would object to my sharing with you a small portion of her life in the form of a personal letter to her parents.

Dear Mom and Dad:

It has now been three months since I left for college. I have been remiss in writing and I am very sorry for my thoughtlessness in not having written before. I will bring you up to date now, but before you read on, please sit down.

Well, then, I am getting along pretty well now. The skull fracture and the concussion I got when I jumped out of the window of my dormitory, when it caught fire shortly after my arrival, are pretty well healed. I only spent two weeks in the hospital, and now I can see almost normally and only get those sick headaches once a day.

Fortunately, the fire in the dormitory and my jump was witnessed by an attendant at the gas station near the dorm, and he was the one who called the Fire Department and the ambulance. He also visited me at the hospital and since I had no where to live because of the burnt-out dormitory, he was kind enough to invite me to share his apartment with him. It's really a basement room but it's kind of cute. He is a very fine boy and we have fallen deeply in love and are planning to get married. We haven't set the exact date yet, but it will be before my pregnancy begins to show.
Yes, Mother, I am. I know how much you are looking forward to being grandparents and I know you will welcome the baby and give it the same love and devotion and tender care you gave me when I was a child. The reason for the delay in our marriage is that my boyfriend has some minor infection which prevents us from passing our premarital blood tests and I carelessly caught it from him. This will soon clear up with penicillin injections which I am now taking daily.

I know you will welcome him into our family with open arms. He is kind and while not well educated, he is ambitious. Although he is of a different race and religion, I know your oft expressed tolerance will not permit you to be bothered by the fact that his skin is somewhat darker. I am sure you will love him as I do.

Now that I have brought you up to date, I want to tell you that there was no dormitory fire; I did not have a concussion or a skull fracture; I was not in the hospital; I am not pregnant; I am not engaged; I do not have syphilis; and there is no tall dark good looking man in my life...however, I am getting a "D" in History and an "F" in Science - and I wanted you to see those marks in their proper perspective.

Love,

Betty

I do not pretend to be able to place anything in perspective with the grace and finesse of Betty. However, in considering the Uses of Traffic Records in Annual Work Plans, it is vitally important to note the key word - "Plan." (This, of course, immediately exposes my bias. I am an evaluator.)

I have heard several distinguished panelists mention three basic components:

1. Problem Identification
2. Program Development
3. Program Evaluation

Certainly, these are basic components. There is, however an underlying current so strong that it should be kept foremost in your mind throughout the entire process (and it is a process). We must not lose sight of
the fact that programs are implemented so as to bring about change. Therefore, it is imperative that we be able to specify "change from what to what?" If I leave you with no other thought this morning, that one should keep you busy.

There is an underlying presupposition in this statement. It presumes that we have information. Only from adequate data can we plan needed programs, implement the programs, and measure the effectiveness of the programs. Needless to say, without Traffic Records, we are basing our programs on suppositions and not facts.

Yesterday afternoon, Ron Marshak discussed Shelby County's "Accident Information System" which had as its basic objective, "Problem Identification." This information was utilized for Program Development and Countermeasure Evaluation. Certainly many problems arise in the identification portion, even for one county. But consider the magnitude of these difficulties when such methodologies are attempted over an entire state.

1. Funds are limited:
   Initially, we cannot hope to implement countermeasures in all of Arkansas' 75 counties, even if we knew what specific problems were present in which specific counties.

2. The thing that has been referred to as "bottom line impact" takes on great importance. At the state level we must give consideration to impactability.

I believe there is a phrase currently in vogue in federal circles which refers to the "Biggest Bang for the Buck." This means that in considering the development of Problem Identification it is no longer sufficient simply to locate the county with the highest number of "X" events and then plug "Y" countermeasures into that county. (I shall return to this point momentarily.)

As we review the masses of data which are now beginning to come in for the purpose of utilizing this information in developing Annual Work Plans, we
must take into consideration at least four basic conditions. Indeed, certain situations may demand consideration of even more points, but as a minimum there are:

1. Type of Research to be done (Basic or Evaluation)
2. Certain values to be considered
3. Those Inevitable Conflicts between Program Administrator and the Researcher - Action vs. Research
4. Research Design and Methodology

I certainly do not intend to go into any great detail on these conditions. But I do want to point out the need to look at them, at least prior to any expenditure of effort toward establishing program objectives.

1. Type of Research to be done (Basic Research vs. Evaluative Research)

Clearly, there is a distinction between basic and evaluative research. They are complementary approaches, and should be seen as two tools of the same trade. Evaluative research implies, and consists largely of measuring performance against a pre-determined goal. Basic research, on the other hand, is an inquiry into the nature of the process involved. Basic research is a process involving an "attitude of pure research for the sake of research," while evaluative research involves a specific goal and inevitably demands a greater personal involvement of the applied researcher in the outcome of the project. I personally feel that evaluative research differs from non-evaluative research more in its purpose than its design or execution.

Certainly, the type of research in which one is involved will greatly influence the nature of the objectives to be established. Those involved in evaluative research have as their primary goal, not the discovery of knowledge, but rather the testing of the application of knowledge.

Generally speaking, research undertaken in your programs will be that of evaluative research. Still, we may do well to keep in mind some of the more important differences between the two
types of research.

The first difference is in the types of the objectives sought, and the methodology used. In evaluative research, objectives will be directed more toward utility. Its methodology will provide for inputs into program planning. There will be a very close tie between evaluation sections and the management information system. In basic research, there is a search for new knowledge regardless of its "conceived" value. The impetus may well be to study the interrelationships of variables rather than our ability to manipulate them under controlled conditions. Thus, there is the distinction between the manipulation and the understanding of variables.

Because of this distinction, a second difference can be noted. As one moves from basic research to evaluative research, he will be moving from the formulation of general theory to specific situations involving concrete performance measures and resulting in a need for clear-cut, measurable objectives. Furthermore, in moving from basic research to evaluative research, one will discover that the number of variables, which may be controlled, will decrease rapidly while the contingency factors, which are not controllable, will increase appreciably.

Irrespective of these fundamental differences between basic research and evaluative research, strong links tie the two together. They each supply ingredients vitally needed by the other. Evaluative research needs the understanding of basic research for program design, and in turn frequently provides not only a testing ground for validity, but a vast reservoir of hypotheses for basic research.

The second consideration I mentioned:

2. Values to be Considered

It has been argued that the value laden nature of evaluative research interferes with scientific objectivity. I would counter
that argument by asserting that evaluative research, like all scientific research, has as its goal both objectivity and replication.

I do not wish to belabor that point. However, values must be a consideration when one is planning to evaluate a program, and must be particularly in mind while one is establishing objectives. Edward A. Suchman, in his book entitled Evaluative Research, notes that values may be inherent in the activity or they may be conceived, whether or not they are really present, or they may be operative so as to determine behavior. For example, let us say that we establish the inherent value that population control is a crucial area in both public health and welfare or that cigarette smoking is the cause of lung cancer. We must create the conceived value that it is undesirable to have large families or to die from lung cancer. Finally, the operative value must be created so as to change the individual's behavior in regard to the use of contraceptive measures or to abstinence from cigarette smoking.

Such examples as these are frequently matched in number with sub-systems in our society holding diametrically opposing values. Our religious sub-system may exercise strong influence on the success or failure of population control techniques and our economic sub-system may successfully oppose attempts to decrease the use of tobacco.

In short, program values may not always coincide with peoples' values. Look at safety belt usage. The inherent value is there. I would argue that we have succeeded in creating the conceived value. Our problem is in selling the operative value in such a way as to bring about change in public behavior.

3. Conflicts with Administration (Action vs. Research)

It has been shown that evaluation as well as action in management functions is indispensible to a successful program. In fact, without some form of evaluation, there is no way of knowing
when or whether a program is successful. Furthermore, if properly implemented, there is no reason to distinguish evaluation from other management activities. Nevertheless, the objection will often be raised that the program should concentrate on action and not be distracted by frills like evaluation.

While this conflict is inevitable, it must be recognized by everyone involved in the program that evaluation is necessary to guide successful project implementation. To be sure, the stressing of the evaluation or research above all else might detract from the immediate impact of a particular program. However, an absence of evaluation would leave the program without a mechanism for determining the most effective actions to take. Therefore, a balance must be struck between action and evaluation research.

What should this balance be? Obviously, a minimum level of evaluation is part of taking action. This is particularly true when many of the techniques used in the program may be new or experimental. The public cannot afford to underwrite programs where there is no check on their value. It is also true, however, that the public is primarily interested in the program itself. It is not sufficient to evaluate a program only to the point of providing reasonable assurance that the cause of the program is being furthered.

Good evaluations are expensive. There are several areas which trade-offs may have to be made between action and evaluative research. Such areas include:

a. The Allocation of Limited Manpower Resources

In addition to the normal constraint of how many personnel a program can provide an evaluation section, there is always the question of how much time existing project personnel should spend or allocate for evaluation rather than to some other project function. For example, how much time should the project director allocate to
evaluation rather than to public education or public information?

b. Allocation of Limited Financial Resources

Whether additional money should be spent to further a specific study or placed in another program area altogether or perhaps be used to extend an existing program is another obvious issue to be decided.

c. The Problem of Time Requirements for Implementing a Particular Program Vs. the Evaluation Requirements

The resolution of these potentially conflicting requirements is of great consequence to the total program evaluation. For example, should a program be delayed from starting up for a month or so in order to permit the taking of baseline data in an uncontaminated environment, or should the program commence and attempt to secure an evaluation without this preliminary reference data?

d. The Effect of the Inability to Evaluate a Particular Program Action on the Decision to Undertake such a Program Action

In other words, the question here is whether a program modification should go untried because of the inability to evaluate it.

e. Finally, even after objectives have been set and programs implemented, an evaluator will frequently encounter administrative decisions which negate his research design. The motives for these decisions may vary. They may be economic; they may be political; but they will occur.

There are no unambiguous guidelines for resolving such trade-offs or answering specific questions like these. The answers will vary with particular conditions and there may be a number of possible solutions for any given problem.

4. Research Design

The scope of my discussion does not permit any in-depth look at research design. Suffice it to say, the choice of research
design will certainly play a major role in the establishment of countermeasure objectives. By like token, if you should first get involved in the setting of objectives, they will certainly place constraints on any subsequent plan for research design. Hopefully, none of you who plan to do any evaluative research will be placed in the untenable position of being handed already designed countermeasure programs for which you are asked to design an evaluation. Rarely is it possible to append an evaluation plan of any quality to a program already written.

A research design is the logical strategy of a study. It is the rationale behind the research plan. I would only caution you to keep in mind that this is the research plan, not the program plan. Too frequently, the program plan is simply to administer the program, not to evaluate it.

One of the major functions that the evaluator can perform at this time is to see to it that objectives are not stated in a form of a credo, but rather that they are stated in a concise and measurable form. Recently, at a conference on the evaluation of Alcohol Safety Action Projects in Bethesda, Maryland, Dr. Julian Waller of the Department of Community Medicine of the University of Vermont was discussing the evaluation of a safety education campaign which is a public information and education project. He used what I thought was a rather appropriate analogy in discussing PI&E programs in general. He stated that most safety education campaigns represent a shot in the dark, using a weapon loaded with questionable ammunition, aimed at a unknown animal located somewhere in the general vicinity. Furthermore, once the shot is fired the shooter commonly congratulates himself and is congratulated by others simply on the fact of the weapon having been successfully discharged, and no one even bothers to see if the prey was hit. It certainly seems appropriate to attempt some improvement upon that technique.

- 105 -
If you plan to run a countermeasure, you will plan to evaluate it. In short, you will plan to plan it!

After having given due consideration to the type of research to be conducted, the values to be considered, the research design and methodology, and the potential conflicts with program administrators, problem identification may proceed and objectives may be defined.

I stated earlier that at the state level, one cannot simply identify a county as having the highest number of "X" events, and therefore, plug "Y" countermeasures into that county. While I have no intention of encroaching upon the "thunder" to be presented this afternoon, I would like to point out that carefully drawn Annual Work Plans will provide for evaluations that deal with more than the question of mere effectiveness. Certainly we could use the Traffic Records System to determine that measure.

Even a cursory review of these records would tell us that a program which proved to be only ten percent effective in Pulaski County (which is Little Rock area) might have far greater numerical impact than one which was seventy-five percent effective in some other county.

Our question then seems to be is it really feasible to expect a program to be ten percent effective in a given county? How do we know that any impact can be expected at all? Let me pause to remind you that the classic experimental method of wiggling a variable and holding everything else still and observing the result is simply not practical.

Has any researcher ever told you people what you have done to our laboratory? You have changed our whole system and you're still doing it. Congested highways? You build freeways then lower the speed limits, not to mention cutting miles driven. Again, another problem of Action vs. Research.

Seriously, researchers realize this is the purpose of their work. We cannot expect nor do we wish to experiment with human life.

But the point is that it really does create a research problem. The
traditional method of "X" events per "Y" miles is contaminated by such factors as the Interstate System. Given the masses of data now forthcoming from the Traffic System, we all have a new challenge from a standpoint of CP's and AWP's. What variables may be used to estimate potential impact?

No one here expects a zero crash rate. But I suspect that there is an optimal rate of crashes for counties with similar factors. True, we do not know these factors, but we are currently attempting to identify them.

Utilizing as many variables as we can find from the entire records system, we hope to be able to identify some pertinent ones, and hopefully, some new ones also, at least some that are new to us.

If we could establish the optimal number of crashes for a group of counties, then it would be possible to identify geographical problem areas. At least we will know where to attempt to make impact with our annual work plan.

Unfortunately, our efforts in this use of the Traffic Records System is still in the embryonic stage. I wish it were presently possible to give you the fruits of that labor.

Finally, permit me to point out that after problems have been identified, programs are developed and implemented and evaluations are completed. Then, based upon the results of that evaluation, new directions may be taken.

I cannot resist sharing you with the story of the evaluator who was directed to prepare a study on fleas. After several weeks of intensive work, he had trained the flea to jump over his finger at his command. Being empirically oriented, the researcher pulled two legs from the flea and ordered him to jump. Sure enough, the flea leaped over his finger. Two more legs came off and the experiment was successfully repeated. Finally, he pulled off the last two and commanded the flea to jump. The flea did not move~ With that, the researcher wrote:

WHEN YOU PULL ALL SIX LEGS FROM A FLEA, IT BECOMES DEAF!!!
Sam E. Luebbert
Highway Safety Management Specialist
National Highway Traffic Safety Administration

A SYSTEMS APPROACH

Almost four years ago, in early 1971, the Region VI Office of NHTSA began in earnest to work with the states in development of data analysis and planning capability to assist them in identifying traffic safety problems and, subsequently, in planning programs for correction. Up to this time, we were primarily concerned with meeting deficiencies relating to each of the highway safety program standards; however, it was soon recognized that while these standards in total generally describe a complete highway safety program, it was difficult to determine the relative importance and effectiveness of each of the standards and their elements.

While not abandoning the standards approach, it was our hope that we could utilize the traffic records data available and identify program areas, first of all based on actual accident problems, and then given that a certain area is identified, address those elements of the standards relating to this program area. We also recognized that progress needs to be made in meeting all standard deficiencies; however, we were looking for a way to establish priorities and to make better use of the limited resources available.

At this time, all of the states in our Region have data analysis and planning capability on staff, and are in the process of developing an update of their comprehensive highway safety plans covering fiscal years 1976 through 1979. While standard deficiencies will be treated, major emphasis will be on problem identification, with the development of programs to correct these problems.

In taking a look at a systems approach for this highway safety effort, here is an illustration of a relatively simple, step-by-step management cycle. (See page 109).
You will note that at the upper left hand corner it begins with the collection of data, following with analysis, which then leads to actual problem identification. From problem identification comes the establishment of goals and objectives; following is the development of programs to achieve these goals and objectives; their implementation, and during this time their monitoring and evaluation; and finally a review or assessment of accomplishments in terms of the initial goals and objectives established. Then the cycle repeats itself, hopefully, with much more information and experience gained, leading to refinement of the system with each cyclical process.

You will note that the actual procedures themselves are an illustration of the typical Management by Objectives System, something all of us have been hearing more about recently, particularly at the federal level. Obviously, what is not illustrated is the mutual agreement and participative management that is basic to an MBO approach. We are working with our states with this in mind, which should lead to well developed programs in the future, that we in NHTSA and our counterparts in the states can fully agree on and jointly support.

Looking closer at this total highway safety management system, here is a VENN diagram, commonly used in statistics, which describes the MBO process in planning and programming terms. (See page 110). You will note that there are three major elements of the system - data or traffic records, planning, and implementation; with four important subelements - monitoring/assessment, data analysis, programming, and evaluation.
This diagram shows the interrelationships of the important parts of the management system. For example, data analysis is common to the data or traffic records system and is input to the planning function. At the same time during this process, the important aspect of evaluation is considered in terms of the data needed, the analysis that is necessary for appropriate evaluation, and the very important function of considering evaluation in the planning phase. Likewise, the monitoring/assessment subelement is common to the implementation phase, evaluation, and the data or traffic records system.

What we primarily want to illustrate here is the very important aspect of evaluation, which is common to every element of the system. During the data analysis and planning functions, evaluation must be considered in order to be able to determine the effect of programs after completion, compared to the initial goals and objectives established. An evaluation plan, its requirements, and its data elements must be considered in this data analysis and planning phase if we are going to measure to any reasonable degree the results of our programs.

All too often, and I think most of us are familiar with this, we have implemented programs and then, during the operational stage or even after all activities are completed, decide that some evaluation or measurement should be made. Unfortunately, we find that no baseline or comparative data has been developed nor is available, and we are left with a fairly subjective judgement of success or failure.

If this important evaluation aspect is considered throughout the entire management process, regardless of the level of activity, appropriate
quantifiable measures can be developed and linked to the attainment of our major goal of accident reduction.

Considering the highway safety management system from the NHTSA viewpoint, there are three major levels of management, each utilizing the inputs and outputs from the others.

**Slide 3**

- National Planning/Programming
- Regional Planning/Programming
- Priority Problem Areas
- Resources
- Policies
- Technical Support

This illustrates the information and communications flow between the three, with the closed loop indicating a constant flow of information between all levels. Relating to only planning and programming, listed are some of the key elements in this communication. For example, looking at the national level, based on national planning and programming, priority problem areas are identified, resources are made available, policies are developed, and technical support is provided.

In terms of the Regional Office functions in this planning/programming process, and based on the flow from the Washington level, regional data analysis is conducted, priority problem areas are identified, and support is given to the state, both in technical and program management areas. This assists the state in their planning/programming activities. With this completed by the state, input is provided back to the Region, forming the basis for development of Regional planning and programming, which then provides input to the National level for future National planning and programming.
As you can see, this is a constant flow, one activity depending on and utilizing inputs from the other. To make this flow meaningful, we at the Regional Office level are working with the states through the Management by Objectives Process, and as a result of our initial activities, have recently submitted to Dr. Gregory our Regional goals and objectives, based on fiscal year 1975 annual work programs.

I have only illustrated the planning and programming functions; however, the inputs and outputs would also apply for the implementation, monitoring, and evaluation elements of the management system as well. I might add that this presentation mainly deals with planning and programming, since thusfar, we have met with our states in two sessions, briefly covering the systems approach, and concentrating only on the planning and programming functions. In the future, we will work with our states in developing the implementation, monitoring/assessment, and complete the evaluation phase, relating it to the entire system.

Again referring to this information flow between the different management levels, here is an illustration that describes in more detail some of the functions of the planning/programming process. As indicated, this process involves data collection, data analysis, then problem identification. (See page 113). Following is the establishment of goals and objectives, and finally, in the programming phase, the actual development of traffic safety programs. In terms of flow from National to state, and based on analysis at that level, a general definition of problem areas is provided on a fairly general basis; for example, the fact that pedestrian and motorcycle accidents are overrepresented, alcohol is a major factor in fatal accidents, and other indicators of problems based on total Nationwide data.

In the establishment of goals and objectives, the state is furnished, through the Regional Office, results of research efforts, demonstration projects, and experience in other states. Then with this information, the Regional Office assists the state in analyzing alternative programs, determining how these programs might affect the reduction of accidents. The state then selects key program areas for maximum impact involving the various activities available to them, such as education, training, and enforcement, as indicated.
In the programming phase, National inputs involve the allocation of funds made available through congressional appropriations, support efforts through technical advice, and specific in-depth results from research efforts. This in turn flows through the Regional Office where direct contacts are made with the states, assisting them in determining where the best pay-off might be for safety programs and what manpower and technical support is needed to carry out these activities.

Still considering the planning and programming aspects, let's take a closer look at the use of traffic records or data at the state level in identifying problems and determining program areas. Through meetings with our states regarding this process, we felt it convenient to describe the analysis as a first, second, and third "cut", which relates to the level of detail in the analysis.
Slide 5

USE OF DATA - PLANNING/PROGRAMMING SYSTEM

<table>
<thead>
<tr>
<th>1st Cut - Major Groupings</th>
<th>Problem Area Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trend/Rate Analysis - statewide, urban rural accidents/injuries/fatal (accidents).</td>
<td>Used to gain a general indication of the problem.</td>
</tr>
<tr>
<td>Contributory/Occurrences - pedestrians; driver age; alcohol; motorcycles; bicycles; occupant restraints; vehicle defects; violations; high accident locations - by geographic areas (county, region); road system.</td>
<td></td>
</tr>
<tr>
<td>Other State/Regional/National data, research results.</td>
<td></td>
</tr>
</tbody>
</table>

For example, this illustrates the first cut approach or major groupings of data analyzed, which as shown on the right, is used to gain a general indication or feel of the problem. Trend/rate analysis is developed both statewide and rural and urban, relating to total number of accidents, injuries, fatalities and fatal accidents. Together with this general first look, an indication of contributory/occurrences is gained such as representation of pedestrians in the accident statistics, age, alcohol involvement, motorcycle, bicycle, use of occupant restraints, vehicle defects, and so on. Also, geographic areas of high accident involvement are identified during this phase. Together with a look at the state data, other state, Regional and National information is utilized, made available from the National and Regional sources as previously indicated.

Slide 6

<table>
<thead>
<tr>
<th>2nd Cut - Target Areas (Impactable)</th>
<th>Problem Area Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Groups - age; sex; contributory factors; vehicles; design factors; occupant restraint use.</td>
<td>To be used in selecting sites and programs for impactability.</td>
</tr>
<tr>
<td>Location - urban/rural; road systems; jurisdictions.</td>
<td></td>
</tr>
<tr>
<td>Time - time of day; day of week; month of year, etc.</td>
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Here is an illustration of what might be considered for a second cut by the state, where more detailed analysis is performed. Actual target areas,
that is those that might be impacted by certain programs, are identified. As indicated, target groups are isolated by age, sex, contributory factors, vehicles, vehicle defects, roadway design elements or factors, and occupant restraint use. The first cut geographic areas are further refined by location, urban/rural, road system, and jurisdictions. At this point, some environmental factors and more detailed design elements might also be considered, such as weather, roadway condition, and roadway geometries. At the same time, an indication of accident involvement by time of day, day of week, and month of year is obtained.

Based on this analysis, some initial problem areas would be identified as a basis for selecting sites and programs for attention through the planning and programming process. You will note that the term impactability is used. Although the analysis may show that certain target areas should be addressed, the database may be too small, or programs may not be available for effective impact. Related to this, cost effectiveness or benefit/cost considerations are addressed before the selection of sites and programs is initially made.

**Slide 7**

<table>
<thead>
<tr>
<th>3rd Cut - Performance Measures by Problem Area</th>
<th>Program Measures of Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enforcement - DWI arrests vs. accidents; citations vs. accidents; effort at time and locations vs. accidents.</td>
<td>Used in determining impact of programs and efficiency in carrying out activities.</td>
</tr>
<tr>
<td>Safety Education - number trained vs. performance.</td>
<td></td>
</tr>
<tr>
<td>Engineering - locations investigated/corrected vs. accidents.</td>
<td></td>
</tr>
</tbody>
</table>

The final analysis or third cut is the lowest level of detail and generally provides for measures of performance to determine actual impact of safety programs and how efficiently they were implemented. For example, in the enforcement area, there may be a correlation found between DWI arrests and accidents, citations versus accidents, and some indication gained as to how much effort was required at certain times and locations to affect the accident reduction which resulted. The same considerations would apply for safety education, engineering, and all other safety activities. The point is that some quantifiable measures
of performance should be identified and, where possible, correlated to reduction in accidents.

What I have attempted to present are some concepts that we have developed in region VI in working with our states, considering the total systems approach to management of the program. Also, we have attempted to establish some of the general relationships between the National, Regional and State levels of management, addressing some key inputs and outputs.

Please understand that this is an approach mainly from the traffic records and data analysis viewpoint. What appears in a State's highway safety program will also depend on many other considerations. These may involve the need to support ongoing activities; certain prescribed local, State and National needs; lack of immediate resources; willingness of state and local agencies to carry out programs; public acceptance and support; legislative needs; and many of the other constraints that administrators must face in their day to day operations.

The important benefits from such a process are, that on an objective basis, traffic safety problems are identified and programs proposed for their correction. After this stage, then the other constraints are considered and, at the same time, their effect on accomplishment of program goals and objectives. In this way, I think the administrator can best justify and defend his program and be better able to cope with these other considerations. A very important aspect, of course, is that if we can properly evaluate the effect of our various programs, we can better justify to our state legislatures and to congress the need for a higher level of funding and, through the planning process, can present to our legislators how much traffic safety these increased funds might provide.

I realize that the traffic safety problem is very complex, and it is not always easy to determine where the problems are, what should be done, and the impact that programs might have. This is simply an attempt to help give some direction in this safety management process. Thank you for your attention.
GOOD AFTERNOON LADIES AND GENTLEMEN. IT'S A PLEASURE TO BE HERE THIS AFTERNOON AND IT'S A PLEASANT SURPRISE TO SEE SO MANY HERE IN THE AUDIENCE AT AN AFTER-LUNCH SESSION OF ANY MEETING IN NEW ORLEANS, LOUISIANA.

AS DAVE BALDWIN MENTIONED YESTERDAY MORNING DURING THE TRAFFIC RECORDS SYSTEM SPECIAL REPORTS, THE TRANSPORTATION RESEARCH BOARD'S COMMITTEE ON TRAFFIC RECORDS SPONSORED A WORKSHOP NEAR DECKERS, COLORADO LATE LAST YEAR.

TWENTY-FIVE INDIVIDUALS COMPRISING VARIOUS DISCIPLINES AND BACKGROUNDS IN THE FIELDS OF HIGHWAY OPERATIONS AND SAFETY, ATTENDED THE WORKSHOP AND PARTICIPATED IN A SERIES OF INTENSIVE WORKING GROUP SESSIONS.

THE PURPOSE OF THE WORKSHOP WAS TO ASSEMBLE A GROUP OF MOTIVATED AND HIGHLY QUALIFIED PROFESSIONALS TO INTERACT IN WORKING SESSIONS AIMED AT PRODUCING GUIDANCE ON THE UTILITY AND APPLICATION OF TRAFFIC RECORDS SYSTEMS.

THE PRODUCT OF THEIR 2½ DAYS OF HARD WORK WAS THE DRAFT COPY REPORT OF THEIR EFFORTS; ENTITLED "PROCEEDINGS OF THE HRB/A3FO3 TRAFFIC RECORDS WORKSHOP." DAVE BALDWIN INDICATED THAT THIS DOCUMENT IS NOW GOING THROUGH THE TRANSPORTATION RESEARCH BOARD'S PUBLICATION PROCESS AND WILL BE AVAILABLE AS SOON AS THAT IS COMPLETED.

THE MAJOR EMPHASIS OF THE SPEAKERS, FOR THE MOST PART, IN THIS FIRST NATIONAL FORUM ON TRAFFIC RECORDS SYSTEMS HAS BEEN AIMED AT THE DESIGN OF SYSTEMS.

THE GOAL OF THE TRANSPORTATION RESEARCH BOARD'S TRAFFIC RECORDS COMMITTEE "DATA ANALYSIS" PRESENTATION THIS AFTERNOON, IS TO PRESENT CONCRETE EXAMPLES OF HOW TRAFFIC RECORDS DATA HAS BEEN USED BY OPERATIONS AGENCIES; A DEPARTMENT OF MOTOR VEHICLES, A HIGHWAY DEPARTMENT AND A POLICE DEPARTMENT IN STATE OR LOCAL GOVERNMENT.
We want to show how Traffic Records data is being used to solve real-life problems as opposed to the more basic research uses of the data, but still illustrating how these agencies have successfully used the analytical treatment of data in solving operational problems.

It is our hope that each of us will benefit from their experiences so that we can return to our agencies with an idea of how we may better use or differently use the data contained in our own Traffic Records Systems.

James O'Day, Head
Systems Analysis
Highway Safety Research Institute
University of Michigan

RESEARCH USES

Last summer the Transportation Research Board's Traffic Records Committee held a three-day conference in a remote spot in Colorado to discuss and write about the uses of traffic record data. We worked in a number of sub-committees--each addressing a different aspect of the usage problem. The one in which I participated was called the "Research Uses" sub-committee. Others were directed toward such topics as the use of traffic records data in law enforcement, in highway maintenance, etc.

There was a set of definitions promulgated at the plenary sessions of this HRB committee conference which grated on the ears of a few of us. That was the differentiation of three kinds of research: statistical research, evaluative research, and scientific research. Many members of the committee felt that there was a difference between "practical" (i.e., statistical or evaluative) research, and "scientific" research. By such a definition, if research is scientific it must not be practical, and if it is practical it must not be scientific.

I'd like to take this opportunity to dispel that misconception in case there are others who have the same viewpoint. It is quite appropriate to divide research activities into "applied" as compared to "pure"--the usual interpretation being that in applied research the results get used and in pure research they are more likely to wind up on the shelf. The term "scientific", on the other hand, simply implies a
methodology...the scientific method, if you like, which can be applied to research of any degree of applied-ness. The scientific method is generally defined as the sequence of (1) generating a hypothesis a statement of some condition the investigator believes is true—and (2) conducting an experiment (or an analysis of existing data) to confirm or refute the hypothesis. The so-called "scientific method" is by no means restricted to use in universities. Indeed, all of you who are asking questions of traffic record data are applying this method—albeit often informally. Consider that the opposite of the "scientific method" would be the "unscientific" method—and most of you would not want that.

In a scientific experiment, statisticians often talk about two kinds of errors in an analysis of data—the false positive, and the false negative. For example, if a patient had a possible bone cancer in his leg, the physician might take data to confirm or refute such a hypothesis. Suppose that there is some uncertainty in the data—that the doctor is not quite sure whether there is a malignancy. If there is, he should remove the leg—and the patient will live. And if there is not a malignancy, he should leave the leg alone.

The first type of error occurs when the physician decided that there is no cancer, when, in fact, there is. He does not operate, and the consequence of the type-I error in this case is that the patient succumbs to the cancer. The second type of error occurs when he decides that there is a cancer when there really is not—in which case the leg is amputated unnecessarily and the patient becomes a cripple.

Statisticians (and physicians) worry a lot about getting enough information (data) to make the probability of error in a case like this very small. And one often has the option to change the experiment—take more data—to reduce the likelihood of both of these errors to some predefined level.

But there is a third type of error which statisticians sometimes joke about. This is the error of drawing a conclusion which is just not supported by the data at all. The physician might amputate the leg because the patient is hard of hearing. We trust that few doctors
would do that. But in an automobile repair garage you may have your shock absorbers amputated because they are dirty.

Lots of us make type-III errors in spite of ourselves. So often we go into a set of traffic record data with a preconceived notion of the result—and we "prove" just what we want to prove without taking care to use the scientific method.

I have an acquaintance who is concerned with rear lighting systems for cars. He has studied accident data, found that parked cars are struck more frequently at night than in the daytime, and has concluded that we need bigger and better reflectors. Now it may be true that better reflectors would reduce such accidents, but forming a conclusion from that evidence is very close to a type-III error. It may be simply that there are more cars parked at night than in the daytime. A specific experiment to look at the effect of reflectors might conclude that they are already large enough to be seen and that the problem is something else.

The point of all this is that people at the operational level in the traffic field frequently don't have to worry so much about the type-I and type-II errors—in part because they are working with a complete census of data (and the usual statistical tests are really not applicable). But these same people are in the best position to avoid type-III error, because they know the elements of their problems at first hand.

We have talked a lot at this conference about computers, management structures, federal standards, programming...and it would seem appropriate that we spend some time hearing from some of the people we created all of this data for. We have put together a program so that you may hear from a driver licensor, from a highway designer, and last—but not least—from a police chief—the village watchman—who both created the data and serves as the ultimate user.

It can be our hope that what we have created as an overall system of data handling in the traffic records field is useful—that when the data which (as Marie Eldridge suggested yesterday) emanates largely
from the village watchman gets back to him, that he has the insight
to use it wisely, recognizing its frailties, in his planning for the
tbetterment of traffic safety. Our next three speakers are here to
share with you their experiences in the application of the scientific
method to real operational problems.

Ronald S. Coppin, Chief
Research and Statistics
California Department of Motor Vehicles

PROGRAM EVALUATION IN MOTOR VEHICLE DEPARTMENTS

Sound safety program management requires that programs, policies and
procedures be periodically evaluated. Program evaluation involves the
measurement of effectiveness as to whether or not a given program is reach­ing and meeting stated explicit goals and objectives. To be sure, before the program evaluation or measurement process can take place, program goals and objectives must be stated. Mager and others tell us that our program objectives must be stated in measurable terms.
Program objectives must also state the specific outcome that is to be expected in order that upon program review, clear measurable outcomes can be reported. Both of these criteria of a sound program objective statement require clear management commitments on the part of program managers.

Government Programs Are Born

Traditionally, governmental programs in motor vehicle departments are born with the passage of some piece of legislation. In my opinion, it is very unfortunate that, seldom, if ever, does the creation of a program carry with it the requirement for program effectiveness evaluation. I believe that if such were the case, we perhaps would have fewer laws on the books since upon proper evaluation some programs would prove to be ineffective.

Process vs Program

Before I proceed further with the subject of program evaluation, let me offer some thoughts relative to the basic difference between pro­gram evaluation (effectiveness) and program efficiency. We in govern­ment seem to be most preoccupied with program efficiency. Program
efficiency to me means "Doing things right." In doing things right, we are most concerned with the process and less concerned with the program. Due to constant budgetary review and constraints, program managers are always seeking "short cuts" and new procedures which will cut the budget. This is not to say that we should not be concerned with keeping our spending in line and looking for ways to push the paper and process the work efficiently. But -- my position is that government is created to serve the people by fulfilling certain program needs, and we need to recognize that our objectives must be aimed toward fulfilling those needs.

On the other hand, program evaluation (effectiveness) answers the question, "Are we doing the right things?" As program managers, then I believe that the second question is the most important one to attempt to answer. To me it is futile to worry about the efficiency of an ineffective program, yet that is what we are doing every day when we continue to manage and operate safety programs, or programs of any kind for that matter, which have not been evaluated in terms of meeting their goals.

So -- one of my major concerns is a lack of interest on the part of most motor vehicle program managers regarding the importance of proper program evaluation as an integral part of program development and implementation. I believe that I express a legitimate concern in this regard, and the basis for this concern is the fact that very, very few motor vehicle departments have a formal research and evaluation program. In fact, to my knowledge, only about five states have a formalized research effort. In addition, some of the Canadian Provinces have begun some evaluation efforts.

Need for Continued Program Evaluation

After some fifteen years of continued program evaluation, research has become a vital part of our motor vehicle administration. As many of you know, we have put our programs to the test of scientific research evaluation. In so doing, it has become clear that many of the traditional
approaches to dealing with drivers no longer show effectiveness -- perhaps some never did from initial creation. Most of our efforts have been in the area of driver control and driver improvement, but in recent years we have also been an integral part of developing new license screening programs and safety education efforts as well.

To me, proper program evaluation and program monitoring are as necessary to good management process as gravy is to mashed potatoes. I'm abhorred by the fact that most public servants can evidently feel comfortable spending large sums of public taxes for programs that have not demonstrated any benefits in terms of public safety. We simply must come out of the dark ages where many programs exist by tradition alone and where even the original program goals can be questioned.

To those here from the American Association of Motor Vehicle Administrators, I would like to urge that you consider formulation of a program at one of your annual conferences which would focus entirely upon the question of program evaluation. I would like to see program administrators deal, for a change, with questions like, "Are we doing the right things?", rather than process questions like, "Are we doing things right?". The former is the tough question to deal with, but -- we must answer this question if we are to defend the existence of programs. It's much easier to deal with issues like uniformity amongst states on records, but what good are records if they are not being used to support effective programs?

Adequate Traffic Records

The measurement of program effectiveness can only be carried out if accurate traffic records systems exist. The very heart of a research evaluation effort is the central record system. Not only do the records have to be accurate, but they must be timely and be maintained over a long enough time period so that meaningful research results are assured. With the increasing cost of maintaining records systems, it seems prudent to gain maximum use of these records. Research evaluation is one of these uses. With the trend toward central computerized records, the evaluation process has in most cases become easier. However, in some instances basic record systems have been reduced due to the high
cost of manual to computer record conversion and additional costs of record input and storage. A concrete example of this occurred in California when decisions were made that it would be too expensive to maintain individual test scores in the central data base. Prior to computerization, this type of summary information was available by testing station. Such information is now not available and the decision was made simply on cost considerations only, and not upon whether or not the licensing program could be evaluated.

Some persons question the wisdom of using official driver records as driving performance criterion measures of program effectiveness. Developing measures of driving performance is undoubtedly the most difficult methodological problem confronting driver research and crash countermeasure development. Unless valid performance measures are available, one has no basis for gauging the effects of a treatment program or selection device. In terms of psychometric theory, the only legitimate ultimate criteria for driving is the "safeness" of the person's real world driving behavior under normative, non-test conditions. This leaves us with two alternatives: use of reported crash and conviction records (traffic records) or surreptitious observation and rating of a driver's on-the-road performance. The latter is usually not feasible and also presents legal problems.

The use of reported crashes is admittedly a dismal prospect because of their low reliabilities and insensitivity. This places severe limitations on the extent to which they can correlate with other variables. However, our research has shown that crash records do reflect non-random treatment effects and relationships if sufficiently large sample populations are used. We therefore feel that, in states with superior reporting systems, crash records can possess validity in the sense that drivers committing the largest number of unsafe acts per mile driven will eventually tend to have the highest crash rates. Rather than dismissing traffic records as criteria, more effort should be devoted to increasing the level and quality of reporting. Often program decision makers do not fully appreciate the need for quality.
reporting systems and their critical relationship to program evaluation. One of my main concerns as a research program director is the protection of the traffic records system so that it has maximum utility in program evaluation.

Much work is currently going on in search of a so-called "intermediate criteria." There is nothing wrong with such measures per se as long as they are shown to have some degree of ultimate predictive validity. However, those committed to intermediate criteria development often mistrust crash records and are therefore reluctant to correlate them with driver crash frequencies. While this reluctance is understandable, the use of unvalidated intermediate criteria cannot be scientifically justified. Such problems as, "Does the intermediate measure actually correlate with safe driving (crashes)?" and "Will a treatment that improves an intermediate criterion performance also result in safer driving?" must eventually be faced. Those who feel that reliability, sensitivity and face validity are substitutes for predictive validity are only deceiving themselves.

Let me now discuss one concrete example of the use of traffic records to develop information which has been important to program evaluation.

Identification of The Accident Repeater

One of the most difficult questions that highway safety groups have faced is one which attempts to develop a so-called profile of the crash-involved driver. We know that the repeat violator, the young inexperienced driver, the drinking driver, the driver with poor attitudes, etc., all are involved in a disproportionate share of accidents. We recently completed a large-scale study whose aim was to attempt to develop a profile of the accident-involved driver. In that study, drivers selected were under 65 years old and resided in Sacramento County. Two major groups totalling about 500 drivers were formed. The first group consisted of an accident group of drivers with a minimum of three accidents within a recent three-year time period, while the second group was accident-free with no reported
accidents during the same three-year period. The accident group was identified and selected through DMV computerized files, while the accident-free group was randomly selected among recent license renewal applicants.

Each driver was first interviewed, given a comprehensive battery of psychometric tests and attitude scales, and then drove about 13 minutes on a specially constructed driving simulator. Test and interview time averaged about two hours per subject. The conceptual areas tapped in the test battery included:

1. Biographical and driving related information
2. Attitude and personality - social conformity, risk taking, responsibility, cautiousness, emotional stability, etc.
3. Parental relationships
4. Perceptual style
5. Physical condition
6. Perceptual-motor skills and reaction time
7. Criminal Record
8. Driving simulator.

The driving simulator was specially built so that the drivers were able to control the speed of the filmed drive by depressing or releasing the accelerator. Electronic tape recorders measured braking, accelerating, steering and reaction times. In addition, the driver was required to react to a subsidiary task which was lights that came on during critical drive maneuvers. The driver was asked to press a button on the steering wheel to extinguish the light.

Out of over 300 measures collected and analyzed, 146 were found to be related to driver accident frequency. However, only a few measures had unique importance in predicting accident involvement when the interrelationships among the many variables were taken into account. The following interpretations were made between accident-involved drivers in comparison to accident-free drivers:

- 126 -
Accident-involved drivers,

(1) Were not as likely to be married
(2) Had more traffic convictions
(3) Had a lower socioeconomic status
(4) Drove more miles
(5) Had more undesirable personality traits and attitudes, and
(6) Considered their driving inferior to elderly drivers.

When we plugged these into a unique prediction equation to determine whether the equation could accurately predict the accident involved in another sample, we found:

(1) 69% of the accident-free drivers were correctly predicted, and
(2) 71% of the accident drivers were correctly predicted.

The net accuracy of these predictions (70%) is about 20% better than could be obtained on a purely blind or chance basis.

The findings of this comprehensive study of the human factors related to accident risk clearly support the notion that drivers do in fact possess traits which differentially predispose them to accidents. The study findings also support the general driver improvement policy of taking remedial and restrictive license action against drivers on the basis of their accrued numbers of moving violation convictions since traffic convictions proved again to be an important discriminator of accidents.

However, we concluded that the validity coefficients attained by the equation were not of sufficient size to justify their use as a screening examination for the licensing or relicensing of drivers. We believe their use would be more appropriate in selecting problem drivers for driver improvement programs and as a possible underwriting tool for insurance companies or screening drivers for large commercial fleets.

In California DMV we are now experimenting with several new approaches that will deal differentially with the entire spectrum of drivers from the so-called "good" driver on one end to the "problem" driver or habitual violator on the other end. We are planning to tailor our
driver licensing test process to more extensive testing of the driver with a poor record. This means, of course, for the first time, traffic records are being used as part of our basic selection criterion. If this pilot program proves effective, then the maintenance of such central records will truly be worth their cost.

Frederick M. Cody
Administrative Assistant to the Registrar
Massachusetts Registry of Motor Vehicles

A SYSTEM TO IDENTIFY CAUSATIVE FACTORS OF TRAFFIC ACCIDENTS

The Massachusetts Registry of Motor Vehicles System assures that appropriate data on traffic accidents, roads, drivers, and motor vehicles is gathered and entered into the records system in such a manner that all necessary data is retrievable and can be used for planning Highway Safety Programs.

An Accident Records System in a state, to be used to its greatest advantage, is required to make use of people, vehicle, and road records to support and guide the program. Record systems and record analysts, or people with corresponding capabilities, should develop together—"neither is fully effective without the other."

The Massachusetts system has the ability to correlate accident data with vehicle, driver, and highway data, as well as to correlate accident experience with existing geometric features and traffic characteristics at specific locations. The objective is a system to identify causative factors of traffic accidents.

Example of Reports

A recent study of fatal accidents in Massachusetts showed that single-vehicle, "off-the-road" accidents accounted for 40% of the total fatal accidents. Of those, 80% struck one or more fixed objects, such as trees, light poles, or posts. The Registry system identifies the location of such accidents, allowing initiation of the removal, relocation and/or redesign of fixed obstructions to provide a clear recovery area for vehicles out of control.
Roadway

An analysis of accidents on Route 128 between Burlington and Woburn for seven months, June to December, showed that there were 92 accidents in this area. Of these, 80 occurred in Woburn and 12 in Burlington. Of the 80 accidents in Woburn, 57.5% were wet-pavement accidents, compared with a 22% average on other sections of Route 128 and a national average of 16%.

A deficiency in the road surface was found through the analysis of the consistency of the mixture in core samples. The speed limit in this area was lowered from 60 to 40 mph with the aid of a massive enforcement effort. The reduction in the number of accidents after this step was taken, can only be described as phenomenal. Total reduction for all accidents over a twelve month period was 67%, for wet-pavement accidents, 95%, and for dry-pavement accidents, 52%. This section of the roadway has now been repaved to correct the deficiency in its surface.

Weather

Some locations have high accident incidence, only when snow or ice is present, causing hazardous conditions. Once these locations are identified, the local Department of Public Works assigns trucks to sand these areas first.

Operators

The system is designed to identify every motor vehicle operator who is involved in three or more accidents within a specific period of time. These drivers must be re-examined and/or attend driver training school, and prove to us that they are capable of using our roadways.

Vehicles

The Registry of Motor Vehicles is evaluating data by year, make, and model of all vehicles involved in accidents. This data is used in the Registry's inspection program, to insure that faulty vehicles are either corrected, or removed from the road.
Locations

The system provides for a pin-point location for all accidents occurring in all cities and towns, as well as on the state highways. Other data (eg. time, weather, road surface, day of week, etc.) is also recorded. All this information is combined in a print-out, which is distributed to all cities and towns, as well as to other enforcement agencies, to be used for selective enforcement. These summaries assure that adequate and accurate information for reliable statistical study is available to assist them in safety program planning, determination of priorities, and implementation. They also give them a reliable means of identifying short-term changes and long-term trends in the magnitude and nature of traffic accidents. The high accident locations are also listed by totals of 50 or more, 30 or more, and 20 or more, so that the worst will be considered first.

Pedestrians

The Registry's system has the ability to identify the exact location of pedestrian accidents, as well as to determine all other factors involved in the accident. These include the time, weather, and traffic controls, along with the age and sex of the killed or injured pedestrian.

It is of special concern to us at the Massachusetts Registry of Motor Vehicles, that the highest incidence of pedestrian accidents involve children of ages five through nine. According to the figures, this age group is the victim in two to three times more pedestrian accidents than any other age group.

This age group spans the first five grades of school and is easily reached by help from the schools. Weekly or monthly reminders about traffic safety can be offered in all schools. These could include movies and lectures, which are currently being presented on a yearly basis in many schools. Educational experts could devise other ways of presenting students with safety lessons--lessons that can be carried with them through out their lives.
I would like to add, if I may, to the flattering introduction which I just received so that my role in traffic matters will be clarified. So often, while seated in a group such as this, I have wondered just who this "expert" actually is, and what role he really plays.

I am a small city police administrator, and in that role I receive all of the work and some of the credit for the traffic engineering and education as well as the enforcement action for my community. That community, incidentally, is Hazel Park, Michigan, a suburban unit located just North of the industrial giant that is Detroit. While we are called a suburb, we are very urban in character.

Hazel Park occupies approximately three square miles of territory in the extreme Southeastern segment of Oakland County, an affluent county often referred to as the bedroom for Detroit's auto executives. If this be true, then Hazel Park must be the county's step-child, quite unlike her in social or economic composition. A blue collar mixture of residential, commercial, and light industrial sections, our city is also the site of one of Detroit's two thoroughbred race courses. Racing fans crowd that facility for almost nine months of every year, travelling to and from the track along our surface streets as well as our major arteries, most prominent of which is Interstate 75, the "ditch" which bisects the city. In addition, peak in and outbound workers use those same roadways daily travelling to and from the shops of our larger neighbor, returning each night to their homes in the numerous cities to our North.

A city of our size does well to support a police agency of forty officers, even though that number must be counted on for full police services as well as concentrated foot patrol and fixed point traffic control at the track. As a result, selectivity of the enforcement
effort becomes even more important than it might be to a "normal" police unit.

We are fortunate in Oakland County to receive the services of a very progressive agency, the Traffic Improvement Association of Oakland County under the capable direction of Mr. Bruce Madsen. Organized during the late 1960's, the TIA provides comprehensive computer programs and services to all communities within the county. Such data is provided not only to the police, but also for engineers, the courts, schools, and the press. Special studies may also be produced upon request, more than 1,000 total reports being provided annually.

A unique aspect of TIA procedure is its "no data dumping" philosophy. That is, our reports are not simply "dumped" into the mail to be "received and filed" in some obscure record drawer, either because the recipient did not realize the value, or because he had never been taught to read its interesting story. Instead, representatives of TIA visit local agencies on a regular basis, informally discussing each report and its application to street operations.

TIA provides us with numerous reports, each of which has specific application to our responsibilities. Let's examine them one at a time.

A good overview of the accident experience is provided by two general reports, the (1) Intersection Accident Rating Report, and (2) the Roadway Segment Accident Rating Report.

The Intersection Accident Rating Report is shown on this slide. (See Appendix 1). The first bracketed columns point to a ranking of intersections according to accident frequency. The second bracket shows how the intersections are ranked according to accident severity, applying arbitrary weights (Fatal-10; PI-5; PD-1) and values. The third bracket shows a rate based upon the number of accidents by traffic volume, which is then converted to a vehicle volume ranking.

This particular printout allows a fast means of identifying major "trouble spots" within our community, locations which require prompt corrective action.
A similar type of printout is produced for sections of roadway or "links" as we refer to them, each averaging about a mile in length. (See Appendix 2). The first bracket, again, lists "links" according to accident frequency; the second bracket ranks them by severity. The third bracket permits uniformity of view by ranking the "links" according to accidents per mile of roadway. Finally, a rate based upon accidents per million vehicle miles is provided.

Once the most serious problems have been located, either by intersection or "link" report, specific location studies may be ordered as shown on this next slide. (See Appendix 3). These permit the drafting of a collision diagram for the location under study, allowing solid decisions to be made based upon graphic evidence. This printout provides a specific location to within five feet of the spot of the occurrence for all accidents, anywhere within the county. The next bracket indicates the type of collision, i.e. right angle at intersection, opposite direction, and the like. The next block contains information of particular importance when planning engineering changes: the chronology, severity, and specific weather, light, and road surface conditions. The final bracket reveals what each driver was doing immediately prior to the accident, any hazardous actions involved, and the point-of-impact information.

Each of the intersection accident reports is concluded with a summary which shows the type of collision, severity, weather conditions, road character, surface conditions, and vehicle type. A complete chronology by both raw numbers and percentages is also provided for month, day of week, and hour of day.

Of particular value to the police supervisor are the Traffic Enforcement Management Reports. They are provided on three different printouts.

The first Management report is a listing of each citation issued including its location and other pertinent information. (See Appendix 4). From this device, a spot map may be prepared to ascertain how "spotty" the enforcement action has been, and also if it is being properly applied against the locations where the accidents are actually occurring.
The second printout in this group is the Summary Report of Enforcement Action for the entire department. (See Appendix 5). This report lists each major violation written by the members of the department, the total tickets issued for each and the percentage which it represents of the total tickets written. It also reveals the number of each written at the scenes of accidents. The number of tickets issued by radar is also indicated together with the total written by each platoon. As a comparison to those written by platoons, these written according to time frames is also included as well as the number of each ticket written to residents. The latter information is of particular importance in determining if members are granting special privileges to "locals".

Probably the most important tool to the supervisor is the Individual Officer's Enforcement Report, a device which permits a thorough review of the enforcement actions of every member of the department. You will note on the slide (See Appendix 4) that the major violations appear along the left hand margin while the dates of the month appear across the top of the report. In grid fashion, the number of violations issued by the officer are listed by type and date with the totals for each violations indicated for that month as well as the year to date in the right hand margin. To further assist the supervisor in weighing these reports, a summary is included at the bottom of each for Hazardous Moving Violations as opposed to Non-Moving Violations. A supervisor can sometimes spot the officers who is playing judge-on-the-street or the man who is building his totals through the use of equipment and/or parking tickets alone. This report also exposes the man who applies the tactic of a-ticket-a-day-keeps-the-sergeant-away.

The key to effective traffic enforcement management is selectivity, of course, i.e. directing the effort for maximum results against (1) the violations which cause accidents, (2) within the areas where most accidents have been found to occur, and (3) during the time frames in which the accidents have been experienced. To determine how well this is being accomplished, TIA furnishes a series of Accident Versus Enforcement
Comparison Reports. Location has proven to be a problem, and we have had to depend upon spot maps for that determination. However, violation type and time of accident-enforcement printouts are prepared for us.

In the Type of Violation Report, (See Appendix 6) both the raw number of violations which accident reports reveal caused those collisions and the percentage of each violation type compared to the whole are indicated in addition to the total tickets issued for each violation and its percentage. This serves to guide us toward those areas of enforcement which should receive greater emphasis.

To assist the traffic supervisor in illustrating that printout to his chief and/or local governmental officials, TIA taught its computer to prepare bar graphs of the information, (See Appendix 7) using zeros to represent a percentage of accidents and Xs to represent enforcement.

For chronological analysis, similar charts of Day of Week, Time of Day, and Month of Year (See Appendix 8) are prepared together with their bar graphs, all very effective tools for determination of the assignment of manpower.

Finally, TIA prepares for its members a printout containing (1) an Accident Summary (total fatal, PI, and PD), (2) an Enforcement Summary (Moving Hazardous and Non-Moving Violations) and (3) an Enforcement Rate (often known as Arrest Index) which is the quotient derived by dividing the total number of hazardous moving violations by the number of fatal and personal injury accidents. The delay in court dispositions made the use of an Enforcement Index impractical.

Those of us in Oakland County law enforcement owe much to those dedicated members of Oakland County's Traffic Improvement Association Traffic Data Center, and we are certain that they take great pride in the number of lives which their information has served to protect.
INTERSECTION ACCIDENT RATING REPORT

INTERSECTIONS ARE RANKED HERE ACCORDING TO ACCIDENT SEVERITY WITH ACCIDENT COST ALSO SHOWN.

A RATING OF INTERSECTIONS ACCORDING TO ACCIDENT FREQUENCY IS SHOWN HERE.

A RATE BASED UPON THE NUMBER OF ACCIDENTS BY TRAFFIC VOLUME IS COMPUTED, THEN CONVERTED TO A VEHICLE VOLUME RANKING.

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<th>SEVERITY INDEX</th>
<th>WEIGHTED VALUE</th>
<th>SEVERITY INDEX</th>
<th>SEVERITY COST</th>
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TOTAL ACCIDENTS BY ROADWAY SECTION

ROADWAY SEGMENTS ARE RANKED HERE ACCORDING TO ACCIDENT FREQUENCY.

SEGMENTS OF ROADWAYS ARE RANKED HERE ACCORDING TO ACCIDENT FREQUENCY.

A RANKING OF ROADWAY SEGMENTS BY THE NUMBER OF ACCIDENTS PER MILE OF ROADWAY IS SHOWN HERE.

A RATE BASED UPON THE NUMBER OF ACCIDENTS PER MILLION VEHICLE MILES TRAVELED COMPUTED, THEN CONVERTED TO A RANKING BY VOLUME.
### TOTAL ACCIDENTS BY INTERSECTION (Part I)

The type of accident is shown here.

The exact location of the accident (referenced to the named intersection) is shown here.

Accident data essential to planning engineering improvements are shown here.

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<th>severity</th>
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<td>ST GO</td>
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<td>ANY SHOT PASS CAR TO STOP CENTER</td>
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REPORTS OF INDIVIDUAL ENFORCEMENT ACTIVITY ARE PROVIDED FOR EACH OFFICER IN DEPARTMENTS PARTICIPATING IN THIS DATA PROGRAM.

THE REPORT INCLUDES:
- CITATIONS ISSUED BY TYPE/BY DAY.
- TOTAL CITATIONS BY DAY, MONTH AND YEAR-TO-DATE.
- COMPARISON OF HAZARDOUS TO NON-HAZARDOUS CITATIONS ISSUED.

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In this type of report, the department's total enforcement activity is summarized monthly. Information includes:

- Citations issued in accidents.
- Radar enforcement.
- Citation by type/by platoon and shift.
- Violator residence.

### Table: Violations

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### Department Totals

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<td>Speeding</td>
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Invalid Violations Count: 1
THIS PORTION OF THE ACCIDENT/ENFORCEMENT REPORT COMPARES CITATIONS ISSUED TO VIOLATIONS CONTRIBUTING TO ACCIDENTS.

<table>
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<th>VIOLATION TYPE</th>
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<td>5216 53.0</td>
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<td>FOLLOW TOO CLOSELY OR FAIL STOP CLR DISTANCE</td>
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<td>FAILED TO YIELD</td>
<td>901 4.8</td>
<td>471 4.9</td>
</tr>
<tr>
<td>FAILED YIELD, LEFT TURN</td>
<td>491 13.0</td>
<td>86 4.9</td>
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<td>2 0.1</td>
<td>3 0.1</td>
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<tr>
<td>PS, LANE, DT, TRN, SIG</td>
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<td>DISREGARD STOP SIGN</td>
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<td>RECKLESS OR CARELESS</td>
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<td>DEFECTIVE EQUIPMENT</td>
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DISPARITIES BETWEEN VIOLATIONS CONTRIBUTING TO ACCIDENTS AND TOTAL ENFORCEMENT ACTION IS EASILY SEEN IN THIS BAR GRAPH.
# APPENDIX 8

## ACCIDENTS VS. ENFORCEMENT COMPARISON REPORT (Part I) - Day Of Week - Time Of Day

The number and percent of accidents are compared to the number and percent of moving violation citations issued by day of week in these columns.

These columns compare accident experience to enforcement activity—in total numbers and percent—by hour of day.

<table>
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<td>THURSDAY</td>
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</tbody>
</table>

Total: 2157

---

Not shown, but included in the complete set of print outs are accident/enforcement comparison data and bar graphs by month of year.
INTERGOVERNMENTAL AND
INTERSTATE DATA EXCHANGE

Presiding Officer:

Basil T. Scott
Administrative Director
New York Department of Motor Vehicles
Albany, New York
ANSI D20 PROGRESS REPORT

As you may know, I've recently been appointed Chairman of the ANSI D-20 Committee on a Model Motorist Data Base for State Motor Vehicle Administration, replacing Charles Emswiler of Virginia, who resigned several months ago because of the pressures of a new position. I'm well aware that the Parent D-20 Committee has not met for quite a while and I'm looking forward to convening this group in the not too distant future.

In the meantime, I'd like to bring you up to date on what's happening with D-20, via this brief progress report.

By way of a very quick review, you'll recall that the D-20 committee has been charged with the responsibility for promulgating:

1. Standardization of terms and data element definitions
2. Coding and record formats
3. Uniform procedures and documents
4. Methods for indexing and positive identification of vehicles and drivers
5. Programming and programmed documentation for standardized usage
6. A system to access records of current status, laws, highway location data, and procedures for related purposes
7. Systems for instant response to and from an on-line installation
8. Procedures to insure the correlation of all data bases
9. Systems and procedures to insure security and confidentiality in data bases

Originally, the D-20 Committee was structured with ten technical committees—a Data Directory Committee (D-20.1), seven committees (D-20.2 through D-20.8) dealing with data on the vehicle, the driver, the highway, accidents, financial responsibility, vehicle inspection, and
reciprocity, and two committees (D-20.9 and D-20.10) to deal with communication systems and data exchange and the model motorist data base design requirement.

The Data Directory Technical Committee (D-20.1) is charged, in the first instance, with developing data element standards for defining, describing and coding all data elements considered a part of the Model Motorist Data Base. The D-20.1 Committee will also be responsible for developing a numbering and cross-referencing system to identify each data element and to provide a means for efficient utilization of the standard. It's important to note in this regard that the numbering and cross-referencing system must be open-ended in design so that future additions may be made without requiring modification to the system.

Technical Committees D-20.2 through D-20.8 are responsible for defining all data elements relative to the sub-system for which they were created. In each case, the Technical Committee is expected to review all known or published standards and definitions and to research existing national, state and local governmental agency requirements in its area of concern. Most importantly, each Technical Committee must standardize its terminology with the Data Directory Technical Committee.

D-20.10, the Model Motorist Data Base Design Technical Committee, can begin to function effectively only after the other committees have virtually completed their assignments, since it is responsible for designing a model system or systems to satisfy the processing requirements set forth by the D-20.2 through D-20.8 committees, and must provide for the communications and data exchange requirements called for by D-20.9.

Recently, we've created three additional technical committees (D-20.11 through D-20.13) in the areas of Traffic Enforcement and Adjudication, Emergency Medical Services and Traffic Safety Program Management. We're now in the process of building these committees, so that little or no work has been done in these areas. In addition, the educational services area has been assigned to the Driver (D-20.3) Technical Committee.
Regrettably, the output of the various technical committees has lagged far behind our earlier expectations, primarily because of the inability of committee chairmen to obtain reasonably full attendance at committee meetings (due, I presume, to job pressures and fiscal constraints which plague all of us involved in volunteer work). Technical committees D-20.2 through D-20.8 have recorded varying degrees of progress in defining the data elements relative to their particular sub-system. The D-20.1 Committee has received several very preliminary data element packages for review, most of which have been returned to the technical committees for further refinement; there are, however, several technical committees which have not as yet forwarded material to D-20.1 for its consideration. Very little has been done to date by this committee towards developing a numbering and cross-referencing system.

The D-20.9 Technical Committee on Communication Systems and Data Exchange has held three meetings so far and has, I think, made some progress in addressing itself to its major tasks, which are:

1. Defining all data elements which are necessary to satisfy the data exchange requirements between users of data contained within the States' Model Motorist Data Base;

2. Researching existing national, state or local governmental agencies' requirements and considering these during the development of the data exchange elements. Additionally, the requirements of private agencies which have a bona fide "right to know" shall be included;

3. Defining methods, procedures, and facilities for the exchange, communication, and security of data. The committee shall include exchange media, such as, but not limited to, printed documents, punched cards, magnetic tape, teletype networks, and computer-to-computer systems; and

4. Reviewing all known or published standards and definitions relative to communication systems and data exchange and including all such standards and definitions where applicable.

The Committee felt that these assignments could be readily translated into developing answers for the following kinds of questions:
1. What are the categories of data that need to be exchanged?
2. Under what conditions will these categories of data be exchanged?
3. How are such data exchanged and what are the technological problems involved in the exchange of these data?
4. What kinds of communication systems will we be talking about?
5. How do we maintain security of data?

All of these questions have been examined in some degree by the Committee in the three meetings which it has held. Its initial effort has been to examine, evaluate and criticize constructively the data elements submitted by the other technical committees. The Committee expended a considerable amount of effort in the areas of driver licensing and vehicle data, and made some preliminary determinations as to which data elements were most susceptible to exchange. It generally agreed that accident data would be of prime importance to researchers and action groups promoting safety efforts, but that there would be little interest in interchange of specific accident case information, other than perhaps insurance industry interest in obtaining past history of accident involvement. Similarly, the Committee sees little, if any, need for interstate exchange of roadway data, and only limited areas of exchange activity for vehicle inspection and financial responsibility data.

More specifically in these last two fields, the Committee envisions somewhere in the future a possible expansion of the trend toward consumer information and protection to the point where historical information on inspection and failures of particular vehicle components might be of interest. In the immediate future, however, it would appear that interchange requirements might be limited to such items as vehicle inspection date, the State of inspection, the year, make and model of the vehicle, the VIN and the odometer reading at time of inspection, and possibly these data elements could be included in the vehicle file. On insurance coverage, it decided that the effective date of financial responsibility requirement and termination and the nature of the financial responsibility compliance would be essential data elements for interchange, for a state registering a motor vehicle formerly
registered in another State.

In its second meeting, the Committee began to approach the basic question of the communications system - who will the users of the system be, what types of request and response media are we talking about and what response criteria will be required? The Committee is now in the process of developing an information user matrix, and when it's completed, it should have a sound basis for determining the needs of our users and, thus, the configuration and scope of our proposed network.

In its last meeting, the Committee started to consider seriously the various alternatives of network design. There was general concurrence that some type of switching center would be necessary to control traffic, but the basic question of whether this can best be accomplished through a national center or regional centers requires further investigation and study. The regional concept, for example, would minimize transmission facilities and facilitate exchange of information between contiguous districts, but this approach mandates duplication of hardware and management which could be expensive. If a national switching center appears preferable, it's possible that the existing capabilities of NCIC or the National Driver Register could be expanded to provide the ability to act as a clearinghouse for information interchange. In its next meeting, the Committee will hopefully be examining three recent developments as the basis for comparing the relative advantages and disadvantages of national and regional switching center operations and management:

1. A regional approach being developed in the Southeast among the States of Florida, Georgia and Alabama;
2. the National Law Enforcement Teletypewriter System (NLETS), which is managed by a Board of Governors representing users of the system; and
3. the Automated Law Enforcement Communications System (ALECS), through which eight mid-western States are inter-connected by high speed data lines and actively involved in data interchange.
The Committee has also done some thinking about system security, and has decided that security in a communications system should be a function of the computer programming of the system. The Committee thinks that the information under consideration is not critical enough to warrant sophisticated security measures such as physical encoding or line jamming. It was agreed that the control of multiple users from both government and private industry would be difficult at the state level and possibly a switching center would ascertain the level of security and the validity of the request. The Committee also felt that a state agency should be nominated as the central point for data collection and forwarding to the interchange network. This state agency would be responsible for the integrity and security of the system. Lastly, it was determined that one of the functions of the Committee should be the issuance of national standards delineating information available to all users. Along these lines, the Committee will be giving further attention to defining the types of information which may be considered sufficiently sensitive to warrant special security provisions.

In looking to the future activities of D-20, we recognized that one of our major needs is a professional person whose time could be committed exclusively to the work of D-20. In this context, our AAMVA sponsors initiated, some months ago, a dialogue with Dr. James Gregory, NHTSA Administrator, and members of his staff, with a view towards obtaining financial assistance for D-20 activities. One of the highlights of this continuing effort during the last half of 1974 was a joint ANSI D-20/NHTSA Leadership Meeting held in Washington, D.C. on August 29. At that meeting (attended by D-20 Technical Committee Chairmen, AAMVA representatives and NHTSA officials), the National Highway Traffic Safety Administration recognized the central role played by traffic records systems in crash prevention activities and in the development of traffic accident countermeasures, and re-affirmed its general policy to support the development within each State of a modern, efficient traffic records system that meets State and local safety data needs.

As a result of these meetings, AAMVA (as the D-20 sponsor) submitted, a few months ago, a contract proposal based upon a three-phase project.
to accomplish the original intent and scope of D-20, as follows:

Phase I

Completion of ANSI endorsed D-20 work culminating in a D-20 Standard.

Phase II

AAMVA sponsored pilot project for the Data Exchange portion of the D-20 standard among volunteer states.

Phase III

AAMVA sponsored project for the design, development and installation of a data management system to implement the total D-20 Standard.

In Phase I, the Data Exchange and Communications Committee (D-20.9) has been constrained to the identification of exchange data users and their exchange data needs as follows:

1. Identify users of exchange data
2. Identify the data elements necessary for data exchange
3. Specify the format of each data exchange element
4. Prepare the appropriate portions of the proposed ANSI Standard document.

It's important to note, in considering these three phases, that Phase I would complete our involvement with, and commitment to, the American National Standards Institute. Phases II and III would be completely independent of that body and would be sponsored exclusively by AAMVA.

In the contract proposal to NHTSA, the specific tasks to be carried out by D-20 were set forth as follows:

1. Develop a work plan for the accomplishment of project activities, including the definition of approach and methodology;
2. Develop a preliminary Data Dictionary/Directory to serve as an aid for the review, formulation and coding of the data elements, and to define the system. It will also serve as a communications device and as a working tool for the sub-committees. To complete this effort, at least the following sub-tasks will need to be accomplished. They are:
Sub-Task (A)  The D-20 Project Staff will work closely with the respective voluntary technical subcommittees to assure the timely completion and submission of the ANSI D-20 data element description forms for each of the data elements specified by the subcommittees.

Sub-Task (B)  The D-20 Project Staff will provide assistance to D-20.1 subcommittee to expedite review and to standardize and structure the submitted data elements received from Sub-Task (A). The review shall include the elimination of redundant elements, the inclusion of omitted elements, the definition of codes as required, and the categorization for the identification into the basic sub-systems.

Sub-Task (C)  The D-20 Project Staff will provide assistance to D-20.1 for the element selection and subsequent development of the preliminary Data Dictionary/Directory.

3. Review procedures and methods for the development of a document containing the ingredients and design of the communications data exchange network. To complete this effort, at least the following sub-tasks will need to be accomplished.
A. Prepare preliminary forms and formats for developing a communications data exchange network standard.
B. The D-20 Project Staff will assist the D-20.9 technical committee in the identification of all data elements which are necessary for the establishment of a communications data exchange network standard.

4. Develop a report formatted for use as a distribution document to acquire consensus approval for tasks two (2) and three (3) above. This document must be approved by the contracting officer prior to submission to the organizations involved in the ANSI D-20 standard review and development process.

On November 8, 1974, AAMVA and NHTSA signed a contract making available the sum of $53,160 in support of D-20 activities for one year. AAMVA staff has been discussing with NHTSA contract personnel the possibility of subcontracting with the Safety Management Institute (which has been providing secretariat services to D-20 without charge since its inception) for the provision of manpower in this area; this agreement would make available the services of one professional for about 3 1/2 days a week during the life of the contract. We received preliminary approval of this arrangement from NHTSA on January 3, 1975.

When we do get someone on board, our first effort will be to develop the work plan called for in the contract. I'll make this available to you as soon as it's completed; it goes without saying that I'd appreciate your reactions, comments and advice on any aspect of our present or future D-20 activities. I look forward to hearing from you.

Sam Mills, Director
Office of Data Processing
New York Department of Motor Vehicles
Chairman ANSI D20.9 Committee

ANSI D20.9 STATUS REPORT

In the original functional statement developed by the parent D-20 Committee, the D-20.9 technical committee on Communications Systems and Data Exchange was given the responsibility for the following:

1. Defining all data elements which are necessary to satisfy the data exchange requirements between users of data contained within the States' Model Motorist Data Base;

2. Researching existing national, state or local governmental agencies' requirements and considering these during the development of the data exchange elements. Additionally, the requirements of private agencies which have a bona fide "right to know" shall be included;
3. Defining methods, procedures and facilities for the exchange, communication and security of data;

4. Reviewing all known or published standards and definitions relative to communication systems and data exchange and including all such standards and definitions where applicable.

In meetings which have been held to date, we have addressed ourselves to all of these tasks to some degree. Our initial effort has been to examine, evaluate and criticize the data elements submitted by the other technical committees.

We approached the basic question of the communications system - who will the users of the system be, what types of request and response media are we talking about and what response criteria will be required? We have developed an information user matrix, and when it is finalized, we will have a sound basis for determining the needs of the users and, thus, the configuration and scope of the network.

We gave serious consideration to the various alternatives of network design. Basic to this analysis was the determination of the residency of the Data Base. Should we plan for one comprehensive National Data Bank or retain the concept of State controlled Data Banks conforming to the standards to be established by D-20? This question has apparently been resolved.

In early 1974, the Federal House of Representatives Committee on Interstate and Foreign Commerce conducted hearings on HR-5529. This bill proposed the creation of a Federal Auto Register for registration and titling of all motor vehicles. An expenditure of 210 million dollars was anticipated for the development of the system.

In a statement filed on the bill, AAMVA offered an interstate data communications system as proposed by D-20 as an alternative to accomplish the basic intent of the legislation - auto recall.

Similarly, as an alternative to increasing the scope and operation of the National Driver Register, AAMVA recommended that the Federal role be limited to that of a message switching center with an index to records
residing in State files.

It is obvious from the position taken by AAMVA, representing the State Motor Vehicle Departments, that there is a consensus of opinion favoring State oriented Data Banks. D-20.9 will, therefore, base the network design on this mandate.

There was general concurrence that some type of switching center would be necessary to control traffic, but the basic question of whether this could best be accomplished through a national center as typified by NCIC and NLETS or regional centers similar to those established by ALECS, requires further investigation and study. The regional concept would minimize transmission line requirements and facilitate exchange of information between contiguous states, but would mandate duplication of hardware and management staff and could result in overall higher costs.

We have done some thinking about system security, and have decided that security in a communications system should be a function of the computer programming of the system. We believe that the information under consideration is not critical enough to warrant sophisticated security measures such as physical encoding or line jamming. It was agreed that the control of multiple users from both government and private industry would be difficult at the state level and possibly a function of the switching center would be to ascertain the level of security and the validity of the request.

The ANSI D-20.9 Subcommittee is comprised of 20 representatives from State Government, Federal Government and the private sector. Technical committee meetings have been limited primarily because of difficulties in obtaining travel funds for specific D-20 Meetings. Consequently, infrequency of meetings has delayed completion of the project and the promulgation of the ANSI Standard.

Therefore, it has been decided that AAMVA will assume the leadership role and be the coordinating organization through which the state Motor Vehicle data processing systems be brought together as a national
network—a network designed to meet the informational interchange needs of the states, as well as information requirements stipulated by Federal standards.

AAMVA has embarked upon a three-phase project to accomplish the original intent and scope of D-20 as follows:

**Phase I**
Completion of ANSI endorsed D-20 work culminating in a D-20 Standard.

**Phase II**
AAMVA sponsored pilot project for the Data Exchange portion of the D-20 standard among volunteer states.

**Phase III**
AAMVA sponsored project for the design, development and installation of a data management system to implement the total D-20 Standard.

In Phase I, the Data Exchange and Communications Committee (D-20.9) has been constrained to the identification of exchange data users and their exchange data needs as follows:

1. Identify users of exchange data
2. Identify the data elements necessary for data exchange
3. Specify the format of each data exchange element
4. Prepare the appropriate portions of the proposed ANSI Standard document.

D-20.9 is currently quiescent awaiting the finalization of the Data Dictionary to assist in the completion of its assigned tasks.

Although it has been inactive, D-20.9 has not been dormant. We are aware of the recent developments which influence our sphere of responsibility. We are pleased with the apparent changing attitude of the law enforcement community toward motor vehicle agencies as evidenced by the latest policy change implemented by NCIC giving motor vehicle agencies the right to access their stolen vehicle and stolen plate file. Although this may only be accomplished through the existent state control terminal, it is a step in the right direction. We noted, too,
AAMVA's reaction to this offer. At the 1974 National Conference the following resolution was adopted. "Be it resolved that the American Association of Motor Vehicle Administrators, as a matter of policy, recommend to all jurisdictions that before an initial Certificate of Title is issued in their respective jurisdictions for a vehicle previously registered in another jurisdiction, the NCIC file be accessed for a possible stolen vehicle record."

By this action, AAMVA endorsed the use of communications to effect an improvement in the titling function, thereby denying legitimate Titles to stolen vehicles and assisting in the solution of the major law enforcement problem of interstate transportation of stolen vehicles.

Historically, the law enforcement community has recognized the value of motor vehicle data bases as an integral part of their information systems. Witness to this is the inclusion of access to motor vehicle files in the design of both the ALECS and NLETS Systems. However, until recently, motor vehicle agencies, by definition, were denied access to and use of these communications networks. We anticipate a change in this policy and an acceptance of motor vehicle agencies as a vital link in the law enforcement process in the immediate future.

The Motor Vehicle Communications Network as envisioned by this committee must accommodate to three basic design criteria. It must provide for interstate interchange of administrative data between Motor Vehicle Jurisdictions. It must have on-line access to the National Driver Register for both input and inquiry. It must access the NCIC stolen vehicle, stolen plate file to preclude titling of stolen vehicles.

At the present time, three communications networks are operational; namely, NCIC, NLETS and ALECS, and a fourth is contemplated to link Motor Vehicle agencies to the National Driver Register. We submit that any one of these networks could be modified and upgraded to serve the needs of Motor Vehicle Jurisdictions. In the future, we will be investigating the advantages and disadvantages of these networks and will promulgate a final recommendation for a D-20 Communications Network.
It is incumbent upon all Motor Vehicle Jurisdictions to actively support the efforts of D-20 and to make provision for accommodating to the standards it will set.

The jurisdictions also have an obligation to become knowledgeable in the area of Data Communications in anticipation of the establishment of a nationwide network. The successful implementation of this concept will rely heavily upon the proficiency of their individual technical staffs. We are confident that this ambitious undertaking can be accomplished and will provide significant improvements to Motor Vehicle Administration, the law enforcement community and the general motoring public.

Brian Connell, Chief
National Driver Register
National Highway Traffic Safety Administration

NATIONAL DRIVER REGISTER

We face a tremendous problem namely to cause safety with records. I believe one of the important issues here is that of getting the right information, to the right people on a timely basis.

One of safety's biggest headaches is paperwork. Decision-makers many of whom are politicians hate it, therefore, often there is failure to act on the basis of good data. Courts generate driver records. These records go to driver files. How does the National Driver Register relate to this. Let me give you the history of the Register, the why it exists, and as important - what it is, and is not.

Possibly there would never have been a National Driver Register (NDR) had it not been for Mr. G. O. Hathaway, the later Superintendent of the Arizona Highway Patrol. He, and others, recognized the need for a centralized "clearinghouse" or "index" for nationwide location and identification of drivers who had established bad driving records in other States. It was just not practical to write to 49 States to determine if a State was licensing a dangerous driver. In 1958, Mr. Hathaway initiated a nationwide questionnaire concerning the revoked driver problem in the United States and the feasibility of establishing
a national registry to help control problem drivers. Originally, there
was considerable opposition to this proposal because several State driver
licensing officials felt that such a move would be an infringement upon
their State's rights. Mr. Hathaway's dedicated interest in such a
registry was instrumental in having a legislative proposal introduced
in the Congress.

In 1960, the United States Congress acted and the National Driver
Register, or NDR, was authorized and established under Public Law 86-660.
The original law authorized only filing of records on drivers who had
their licenses withdrawn, revoked or suspended for either DI (driving
under the influence) or being convicted of a traffic offense resulting
in a fatal accident. In 1966, the law was amended (Public Law 89-563)
to allow States to send to the Register license denials, revocations,
and suspensions, for reasons other than DI's and Fatals. The Driver
Register became operational in July of 1961 within the Bureau of Public
Roads, U. S. Department of Commerce. With the establishment of the
Department of Transportation, the NDR was transferred to the National
Highway Safety Bureau, which has been renamed the National Highway
Traffic Safety Administration (NHTSA).

The Congress specifically limited access to the NDR file. No inquiry
may be accepted unless it involves the processing by a State of a
driver license application, either original or renewal. The Federal
Government, also, may obtain data but this is also limited to an ap­
lication for a Federal driver permit. The users of the National Driver
Register (NDR) file, then, under the current law are defined and very
clearly limited. There has been proposed legislative change to authorize
traffic courts to obtain Register data, through the States, for the
purpose of assisting in determining appropriate sentences for moving
violations.

Also, a previously proposed legislative change would authorize emp­
loyers of drivers to obtain data on their drivers, or driver job ap­
plicants, if a State agrees to send the inquiries to the Register for
the employer. If a State did provide NDR data to an employer of a
driver, the State then would be required to provide a "free" copy of the
data to the driver.
The current and proposed law under which the Driver Register operates, or will operate, is unusual. It is unusual in that the States are not required to participate in the program. This is true even though the driver license standard requires "Driver Records" to be checked prior to issuing either an original or renewal license. States participate in the program because it is of benefit to them individually and collectively. All States do participate in the program; some to a greater extent than others. However, 2 States send records only, not inquiries to the Register. We ask all States to send reports to the NDR on all their denial and withdrawals of driver licenses — and — we ask all the States to check all of their original and renewal applications with the NDR. We get "mixed" responses to our solicitations for total contributions to, and, use of, the NDR. I ask you to determine what your State is doing in NDR participation. If you have questions, call me — or ask me to visit you.

Presently the Driver Register master file of problem drivers contains over 4.7 million records. The basic operational concept is that State driver licensing officials send reports of licence revocations and suspensions to the Register where they are placed on an automated data processing master file. States also send inquiries on persons applying for, or renewing their drivers' licenses. The Register operates under an exception reporting basis, whereby if we do not encounter a probable record match against a driver record on the file, we will not respond. When the computer produces a probable match, a printout is returned to the inquiring State. In order not to delay, we have an established policy to process a transaction within 24 hours after receipt. Also, to deter some of the more "cagey" individuals who go to another State to apply for a new license in the interim period between their conviction and revocation, we make a delayed search to match inquiries against withdrawal records that are received at a later time.

It is important to point out that any action taken with the information provided by the Register is entirely up to the inquiring State as it
retains all authority in its driver licensing program and -- the probable identification provided by the Register is a non-legally sufficient document. It merely informs the inquiring State concerning a driver's record and status in another State. Absolute identification based on the limited data contained in the Driver Register file is impossible. It is then up to the inquiring State to obtain adequate verification information. Incidentally, whenever we match names, dates of birth, and Social Security number, we feel confident we have a solid hit. But this is not true on common names, such as John Smith, unless we get a Social Security number match.

Because the Driver Register program is a voluntary Federal-State cooperative effort, the States are in a position to "pitch" and we "catch". The "monkey is on our back" to produce accurate responses promptly. We accept input to the NDR in not only a wide variety of input media, ranging from magnetic tape to manual forms, but also in all variations of formats. We currently use over 50 computer conversion programs to transpose State data into our standard record format. To give you an idea of the volume handled, every night we process 90,000 inquiries and 5,500 revocation reports and retrieve 700 matched records which are sent to the States.

I said earlier the NDR master file is an "index". That is because it contains a limited number of critical data elements. To meet the minimum criteria for acceptance into our file, we must have the name, date of birth, date of withdrawal action and the reason for withdrawal.

We also accept and encourage the States to furnish the driver's license number and/or Social Security Number, sex, height, weight, and eye color.

Because there is no compatible unique human numbering system used by all the States, the Driver Register automated file search is based primarily on name and date of birth. Very unusual names create no problem; however, common names cause considerable problems. Our computer program attaches values to human identification data items submitted and outputs those that reach an acceptable score. The problem is that on a John Jones with only the date of birth furnished the computer must
consider all blank or non-furnished data items as scoreable. In other words, if eye color is not furnished, a score is given because we do not know what it may be.

The point I am trying to make is that there is a need to furnish complete and accurate identifying data. For example, how can you, the State, or the Driver Register accurately identify a person with a common name by just recording the name and age? No one can, and this pinpoints a critical problem in the traffic records area. A record created like this has limited further value. Why generate such records at all? Also, the lack of precision driver identification limits our ability to protect drivers' rights. How can we tell a driver what his total driver record is --- if we can not match records with precision?

There are some innovations taking place which can be of great assistance to traffic courts. The State of Maryland's Municipal Court of Baltimore is able to directly access the State driver record file. This new equipment introduces television-type display screens into the traffic court to enable judges to view driving records prior to passing sentence for traffic offenses. Some States have indicated an interest to interface the Register in similar fashion.

The age of rapid communication is here. Many States have electronic direct access systems of varying types to their driver record files. One can foresee the day when most traffic courts will have a similar system as is in use now in Maryland. Traffic courts are primary generators and users of traffic records.

- I wonder how many traffic courts are represented or have liaison with those involved in developing your State traffic records system? How about court forms -- do they contain data compatible with that kept by the State?

- Are there delays in reporting court actions to the State -- are driver records agencies reporting in a timely manner to courts - police -- what is timely? 3 seconds? 30 days?

- Should the courts be responsible for ascertaining that the delivery
of their products; namely, driver records, are in fact made to the central State driver records file? Why should less than 100% of traffic convictions get into the drivers' State files?

What about the legal ramifications of rapid communications of driver records on: (a) an intrastate basis and (b) on an interstate basis?

Some of this is discussed in the NDR final report on the July 1973 Louisville conference - read it.

I believe if we all look at the emphasis that is rightfully placed on courts having rapid access to comprehensive PRESENTENCE INVESTIGATION REPORTS before sentencing alcoholic problem drivers we could agree that every reasonable effort must be made to routinely acquire National Driver Register data on all original and renewal driver license applicants.

In this day of emphasis on individual rights and basic fairness to people, let us not overlook the unfairness to the driver who is sentenced by a traffic court based on his entire driver record while another driver avoids his prior record because the State did not check the Register when it initially licensed the driver or, when it issued a renewal license.

I ask you if it is not essential for traffic records authorities to be certain, systemwise, that all recorded denials and withdrawals of driver licenses, and all original and renewal driver license applications be sent to the Register on a timely basis? You and your bosses should decisively address and answer these basic questions. I repeat: Call me or ask me to come and see you if you are interested and want more information.

Suppose, for example, your agency (or you personally) is sued by an estate because your State licensed a driver, without checking the Register, who had a total of 47 drunk driving revocations recorded in the Register -- and this driver, drunk out of his mind, drove head-on into a car killing an entire family. How would you answer the question: "Why did you not send an inquiry to the National Driver Register?"
Do not depend on "State Immunity" from such lawsuits because that is changing.

Many States now do send all, or nearly all of their license denials and revocations to the Register. But some are, perhaps, overly selective. You should put a systems "eye" on this and form an intelligent judgement.

Many States now do send to the Register inquiries on all original and renewal license applicants. But some States check the Register only on original license applicants and not on renewals. I suggest that not checking renewals with the Register is like fielding a football team with 9 players -- you are going to have some serious "holes in the defense." But carelessly licensing bad record, problem alcoholic drivers is more serious than losing a football game -- or is it?

We in the Register are working with the ANSI D-20 committee and subcommittees on various problems such as the need for standardization of terms and precision driver identification. Basically, we are continuing to try to keep the Register as responsive to the needs of the States as we can. Sometime after the first of the year, 1975, we will be contacting you to help us improve the NDR system.

We are now negotiating, with several outside firms, to do a detailed, technical, driver records communications needs study, and, based on the determined States' needs, the contractor will design a new Register system providing for some, if not all, of these authoritatively determined needs of the States. We found some substantial direction on this at Louisville in 1973, now we will follow-up in a more comprehensive way. All States will be contacted in this new NDR improvement project.

We are also working very closely with State and Federal officials to improve, in every reasonable way, the security of the Register's records system, and, the protection of the individual as well as the public. No one but authorized State and Federal officials are allowed access to the Register's data bank.

In conclusion, I want to suggest that one of your (and our) most serious problems is how can we achieve the universally compatible,
precision identification of drivers on driver records, and, at the same time protect the driver from unwarranted linkage of his personal data to inappropriate records? The balance among: (1) individual rights to privacy and fair treatment, (2) freedom of information, and (3) protection of the public will be difficult to manage -- but that is our job. Good Luck!

Frank Buell
Special Agent
Federal Bureau of Investigation

NATIONAL CRIME INFORMATION CENTER (NCIC)
(Outline of Presentation)

A. NCIC
1) File draw concept
2) National index
3) State and local indices

B. RECORDS ON FILE - November 1, 1974
1) Wanted Person File - 152,126
2) Vehicle File - 943,032
3) License Plate File - 329,728
4) Article File - 1,128,435
5) Gun File - 796,385
6) Securities File - 1,636,659
7) Boat File - 11,089
8) Criminal History File - 497-168

C. TRANSACTIONS
1) For month of October - 5,252,688

D. AGENCIES ON-LINE
1) State - 50
2) Metro - 25
3) Federal - 9
4) Other - 2 (RCMP and NY State Division of Criminal Justice Services)

Total - 86
E. AGENCIES WITH COMPUTERS

1) State - 29 (21)
2) Metro - 17 (8)
3) Federal - 3 (6)
4) Other - 1 (1) (NY State Division of Criminal Justice Services)

Total - 50 (36)

F. REMOTES OPERATING IN STATES - ROUND FIGURE 6,000

C. J. Beddome
Executive Director
National Law Enforcement
Telecommunications Systems, Inc.

NATIONAL LAW ENFORCEMENT TELECOMMUNICATIONS SYSTEMS, INC.

Background

As early as 1927 teletype was being used by law enforcement agencies in Connecticut. Two years later it was in use by the Pennsylvania State Police, and in 1930 the first interstate teletype system went into service connecting New York, Pennsylvania, and New Jersey. Subsequent dramatic advances in air travel, highways, and automobiles necessitated an equivalent advance in interstate law enforcement communications to even keep abreast of highly mobile criminals. For the next thirty years much of the communications development and improvements occurred within cities and states.

During 1964, the first national level system (LETS) was placed in operation linking all of the continental state police with a teletype message service. However, as message traffic increased, the system, operating on multi-drop low-speed circuits and "torn tape" relays, gradually developed large traffic backlogs and delays. Moreover, since the original LETS system was not directly connected to State law enforcement computer systems, it could not rapidly access on-line driver license and motor vehicle registration information. A mobile unit chasing a speeding vehicle with out-of-state plates needs to obtain up-to-date information within a few seconds.
On December 24, 1973, interstate law enforcement communications took a giant step forward with the implementation of the current NLETS Network.

What Is NLETS?

The National Law Enforcement Telecommunications Systems (NLETS) is a sophisticated computer-switched communications network linking all of the law enforcement agencies in the continental United States, Hawaii, Alaska, and Puerto Rico. NLETS communication facilities are also utilized by other state agencies such as the Department of Corrections, Courts, and Wild Life Management and is available to Federal agencies such as the Bureau of Customs, U. S. Marshal, Postal Inspector, Secret Service, the Internal Revenue Service, and Military Provost Marshals. Indeed, the NLETS Network concept could be readily extended to include Canada, Mexico, or even overseas locations.

The heart of the NLETS system is a pair of Action Communication Systems, Inc. Nova computers located in Phoenix, Arizona. High-speed 2400 baud lines are used to provide direct computer connection to individual state computer networks. The state computers in turn are connected to state, county, and city networks. Users who are not yet ready to connect to their state computers are serviced by individual 150 baud lines to a Model 37 ASR Teletype terminal. Irrespective of the line type, NLETS communicates with a single Point of Entry (POE) to each state level user. The distribution of messages from the POE to individual end users is a state responsibility. A high-speed line also connects the National Crime Information Center (NCIC) to NLETS. This line is mainly used to relay NCIC hit messages to originating record agencies. NCIC lines to Puerto Rico, Alaska, and Hawaii will also be utilized to provide communications links to NLETS. Statistical reports are generated each month to provide management information for all NLETS users.

Who Controls The System?

Although NLETS is a National system, it is directly controlled by the member states. It is incorporated as a non-profit organization in the State of Delaware. Each state appoints an active member to represent them in the NLETS organization. Several states who have a regional community of interest are grouped together to form an NLETS region.
There are eight NLETS regions. The state representatives in each region elect a Chairman each year. The Chairman represents the region on the NLETS, Inc. Board of Directors. The Board is responsible for making all policy decisions and elects a President and two Vice-Presidents. A full-time Executive Director is employed to administer the Corporation and to conduct the organization's day-to-day business. He is responsible for implementing and enforcing the Board's decisions. The Executive Director's office is located at 1202 E. Maryland, Suite 1E, Phoenix, Arizona 85014. The telephone number is (602) 264-5214. The entire system is financed by contributions from each user and supporting or improvement grants from the Law Enforcement Assistance Administration (LEAA) or other foundations or granting agencies.

What Services Are Available?

The NLETS Network, with fully redundant hardware and software, is operational 24 hours per day 7 days a week to provide near instantaneous response to inquiries originated at any point in the United States. The messages may be point-to-point administrative messages, regional or national APB's, out-of-state driver's license or vehicle registration inquiries or responses.

In each instance, NLETS serves only as the routing and communication agency. No data-bases are maintained by NLETS, and no decisions are made by NLETS as to what data-bases may be accessed within a state. The network can handle up to 26,000 messages per hour distributed over 50 high-speed 2400 baud lines. Some large-scale users such as California, Pennsylvania, New York, Illinois, and Texas are currently sending and receiving over 30,000 messages each per month.

Security And Privacy Features

Several unique features of the NLETS Network provide a high level of system security and privacy. Each entry-point into the system and the central switching computers are placed under the direct control and supervision of a state or federal law enforcement agency. No data bases, messages, or information on any citizen is retained within the network. Responses to inquiries are obtained from up-to-date files...
maintained at the grass-roots level where the data was originated. Overall policy decisions and operational control of the network is directly in the hands of the elected representatives of the NLETS community. The system can, therefore, be truly regarded as a high-performance communications service which enables law enforcement agencies anywhere in the United States to exchange vital information within seconds of any incident.