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DESIGN FOR NASS: A NATIONAL ACCIDENT SAMPLING SYSTEM

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16. Abstract

A design is presented for a national accident investigation program based on sampling theory. By limiting the number of investigations within a strict sampling plan it is possible to record sufficient detail about each accident, to produce national estimates of injury, property damage, and other accident characteristics which will be useful in cost-benefit analyses. The system described has three major facets--a program for continuous acquisition of data of a random sample of all tow-away-pedestrian-bicycle-motorcycle accidents occurring in the U.S., a program for occasional acquisition of additional data on selected topics quickly and on-call, and a program for conducting in-depth or multidisciplinary accident investigations for accidents of particular interest.

While alternative approaches are discussed, the system recommended consists of 35 primary sampling units distributed throughout the 48 contiguous states. The design is complete and the system is ready for pilot implementation. Full implementation is possible over a period of three years.

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APPENDIX A

ACCIDENT POPULATION TO BE CONSIDERED

A need has been expressed for developing estimates of occurrences in the national accident population in two somewhat different ways--first a set of accident centered statistics, and secondly a set of vehicle/driver/occupant centered statistics. The development of samples which permit reconstruction into either the vehicle or accident populations will be considered in the approach to sample selection.

As a starting point for this discussion let us assume that a primary sampling unit has been chosen,* and that it has a population (i.e., number of persons residing in the jurisdiction) of the order of 200,000. Estimating from Michigan reported accident experience, this number of residents might be expected to yield about 7,500 "police-reported" accidents per year, about 2,875 accidents in which at least one vehicle was towed from the scene (defined here as a "towaway accident", approximately 13,300 vehicles in the set of police-reported accidents, and approximately 3,600 vehicles which had to be towed from the scene of the accident (defined as towaway vehicles).

In addition there may be a moderate number of accidents which are not reported to the police, but which are reported to some other agency--e.g., an insurance company, a hospital, or a towing company.

*The design of a cluster sample of PSU' representing the nation is addressed in Section 4 of this report.

And finally, there may be a number of accidents which are not reported to anyone other than the person or persons involved--ranging from a fender bent on the garage door to some rather severe injury (or damage) accidents which are just not reported to authorities.

The National Safety Council has, for some years, attempted to produce a statistic representing the total number of highway vehicle crashes (and the number of crashed vehicles) each year. Recht's 1968 paper* describes briefly the considerations which have gone into the development of that statistic, and with respect to the definitions developed here it must be considered closest to the sum of all police reported accidents plus those accidents reported to all other agencies plus those unreported accidents (which occurred on public roads) in which there was something like $25 worth of damage to a vehicle.

It is difficult to set a minimum severity level for inclusion. Dollar limits have the disadvantage of varying parts and labor rates throughout the country, and indeed many small damage accidents never lead to repair or to a precise determination of the loss. In a sense, each time one car touches another--e.g., touching bumpers in backing into a parking space--there is some degree of damage. This would seem to exceed the limits of what might be useful in a set of accidents intended to represent the national population for purposes of rulemaking or research into injury cause. But a first order of business must be to set a definition of an accident which is useful (in terms of the problems to be solved), consistent (across many jurisdictions), and identifiable generally from data

*Paper by Recht, 1968.

already available in the record keeping systems of the various jurisdictions.

Figure 1 shows this in diagrammatic forms with an arbitrary severity scale and an estimate of the frequency as a function of that. It should be clear that the categories are not necessarily mutually exclusive (although they have been shown that way here). There may be injuries without towaways; indeed there are a small number of in-car fatalities without the necessity for towing the vehicle. And there are accidents reported to the police but not to insurance companies and vice versa. We have estimated from Oakland County data as shown in Figures 1 and 2 that approximately 1/3 of the injury accidents (as reported to police) do not involve towaways, so that if we sampled only towed vehicle accidents we would tend to under-estimate the injury county.*

Injuries, as reported by different police agencies, leave some doubt as to the meaning either of the absolute count (injured vs. uninjured) or as to the level (say on the KABC scale). In our local experience, for example, we find many police-defined "A" (or "serious") injuries which turn out to be minor on the AIS scale (level 1), but we find also a fair number of minor injuries (on the AIS scale) which were not reported as injuries by or to the police. The inconsistency of police injury reporting across jurisdictions has been noted before,** and it does not seem useful to depend

*Note that more than 75% of the non-towaway injuries are at police level "C" - complaint of pain, so that the underreporting would not miss so many of the more severe injuries.

**See, for example, Scott and Carroll - Volume IV.

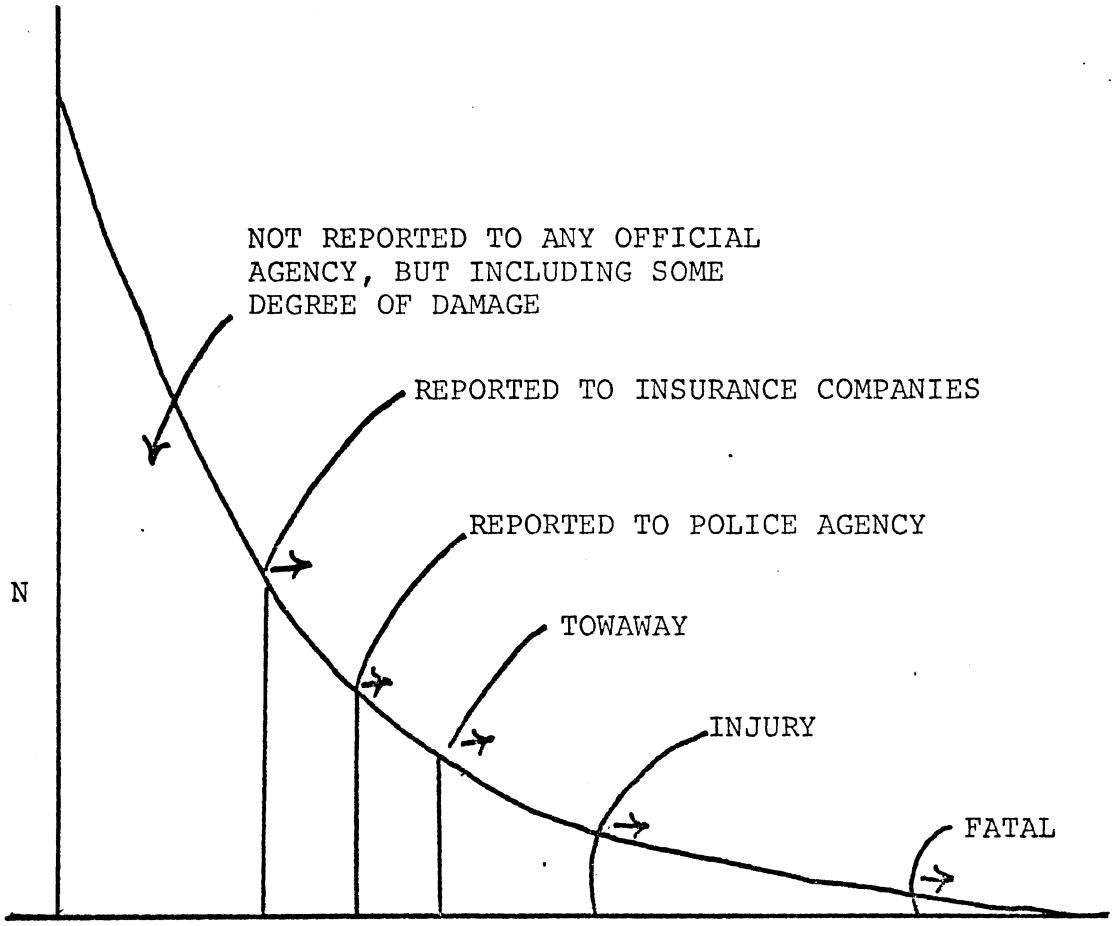


FIGURE 1. DISTRIBUTION OF ACCIDENTS BY SEVERITY

on that kind of data to predict injury distributions in the nation...even to the extent of defining injury vs. non-injury accidents.

Lets take a look at the several possible populations of accidents which we might consider as candidates for study. These will be discussed individually below:

(1) All Fatal Accidents.

While it would be possible to collect data on a sample of fatal accidents, it seems of doubtful value in the light of the fatality file effort. It will be worthwhile to identify the fatal accidents in whatever national sample is taken simply as a check against the fatality file, i.e., considering the fatality file as a standard.

(2) All Injury Accidents.

These would consist of all accidents in which there were any injuries. A first problem is the definition of an injury, since there are different interpretations of this in different jurisdictions. It might be possible to compile a list of "injury" accidents from a combination of hospital records, police reports, insurance company claim records and a set of personal interviews to identify those injuries not reported elsewhere. It is clear that there are numerous minor injuries which are never reported to any official agency--e.g., a head bruise in a hard stop, slamming a finger in a door, and probably a considerable number of latent muscle injuries which are recognized only a day or so after the crash.

(3) All hospitalized injury accidents.

This set might be limited to those accidents in which at least one person was transported to a hospital

for treatment (either for admission or for emergency room treatment). Transport to hospital is a practice which varies widely with jurisdiction--i.e., if a hospital emergency room is nearby many minor injuries may be taken there; if it is not nearby the injured persons may be treated at a doctor's office, or even at home. The chance of bias from rural to urban areas makes this a poor choice. Further, many of the quantities of interest for evaluation depend on having some representation from a non-injured population--e.g., the determination of the percent of front seat passengers injured by class of restraint system worn.

(4) All Towaway Accidents.

This set would be constituted of all accidents in which at least one vehicle was towed from the scene. Slight variations on this theme might require, for example, that the vehicle be towed because it was not driveable rather than that the driver was not available (because he was injured or drunk). There are several disadvantages to this choice. Towaway is not necessarily consistently defined from one environment to another--e.g., there may be a tendency for people in rural areas to change wheels or plug radiators and then drive away, whereas in an urban area (with adequate towing service and some pressure by the law enforcement agency to clear the scene) the choice would be to tow before performing any repairs. A second disadvantage is that strict adherence to this set would eliminate most pedestrian and pedacycle accidents, and probably a substantial number of motorcycle accidents. These will be addressed again below, but it would seem that a strict towaway definition would have to be augmented or modified to include representation of these.

(5) All Police Reported Accidents.

This is probably the easiest set to identify, but also one of the most variable among jurisdictions. Police reporting practices vary both by legislation (e.g., one state requires reporting only injury accidents, another accidents with a total of $200 damage, another with damage of at least $100 to one of the vehicles involved, etc.), by policy (e.g., do or don't report accidents on private property), driver reports only (which may be infrequently completed) unless the police are specifically called to the accident, etc., and by virtue of variability around the country as to the dollar value of a particular loss (e.g., body shop mechanics in Detroit have an average wage rate nearly twice that of their counterparts in southern Ohio). A final comment on police reporting practices is that they may change with time, for example when a new police chief modifies departmental policies or when a new problem arises. In Texas in 1974 there were many more pedestrian accidents reported than in 1973, and we suspect that this may have resulted from a particular attention to pedestrian accidents in connection with the 1974 daylight savings act. Pedestrian fatalities over the same period were down substantially, and it would seem that the increase in injuries was a reporting artifact.

(6) All Accidents Reported to all Official Agencies.

This might be thought of as the intersection of all accidents reported to the police, the hospitals, the towing companies, the insurance companies and perhaps others. (For example in one jurisdiction a vehicle fire which was not the result of a crash, even though it involved injuries, would be reported only through the fire

department. In another jurisdiction the same incident might be reported to the police, but recorded on an Incident report (as would be a burglary) rather than as a vehicle accident. This set of data is attractive from the standpoint of completeness--it would seem to include almost all of the injuries of any consequence and most of the substantial vehicle damage. But the time delays in reporting make it likely that the involved vehicles could not be identified and inspected within hours or even a few days after the crash, and it is thus perhaps a poor choice if a vehicle inspection is desired or required.

(7) All Accidents.

Here there is a difficult definitional problem. There have been a number of attempts to define an accident as, for example, $25 worth of damage to any vehicle, any injury, any visible damage to the vehicle, etc. Anyone who has priced the repainting of a door scratched by another door in a shopping center parking lot may find that the $25 limit has been exceeded, and such encounters would qualify under this definition.

It is not intended to indicate at this point that any of the above definitions is wrong. The choice depends largely on the purpose of the data collected. For the National Safety Council, with an interest in showing the magnitude of the highway accident problem it seems appropriate to use the broadest possible definition. If we had an interest only in how fatal accidents occurred, we should certainly use only the set of fatal collisions. If we are interested in only how injuries occur we should perhaps look only at injury accidents, but if we are interested in how injuries are prevented we should no doubt include some non-injury accidents.

Further, in viewing this problem as a national sampling effort, we must choose a set which is at once (1) useful to us in solving whatever problems we have defined and (2) implementable in a consistent fashion across any of the jurisdictions we might choose to operate in.

The need for sampling of relatively detailed accident information has come about mainly because of interest in injury prevention. For that reason it is appropriate to define a population from which we will sample (and thus which we represent) contain a substantial proportion of the (more serious) injuries. Pedestrian, bicycle, and motorcycle accidents do not usually involve a "towaway" vehicle, but they must be included to provide a good picture of injury. Recognizing that there are definitional problems in police reporting of, say, pedestrian accidents, there seems to be no alternative at this writing but to include all police reported accidents of these types in the population to be sampled.

The Vehicle Sampling

All of the above has addressed primarily the accident characteristic, as opposed to vehicle characteristics. In defining a list of questions we would like to ask about national statistics we can divide them into (at least) two groups--accident centered questions and vehicle centered questions. Accident centered questions are those such as: What proportion of accidents are classified as "rear-end", or how are accidents distributed by vehicle mix such as car-car, truck-car, truck-truck, motorcycle-car, etc. Typical vehicle centered questions are: What is the difference in injury distribution between drivers and right front occupants of passenger cars (over all of the kinds of accidents in

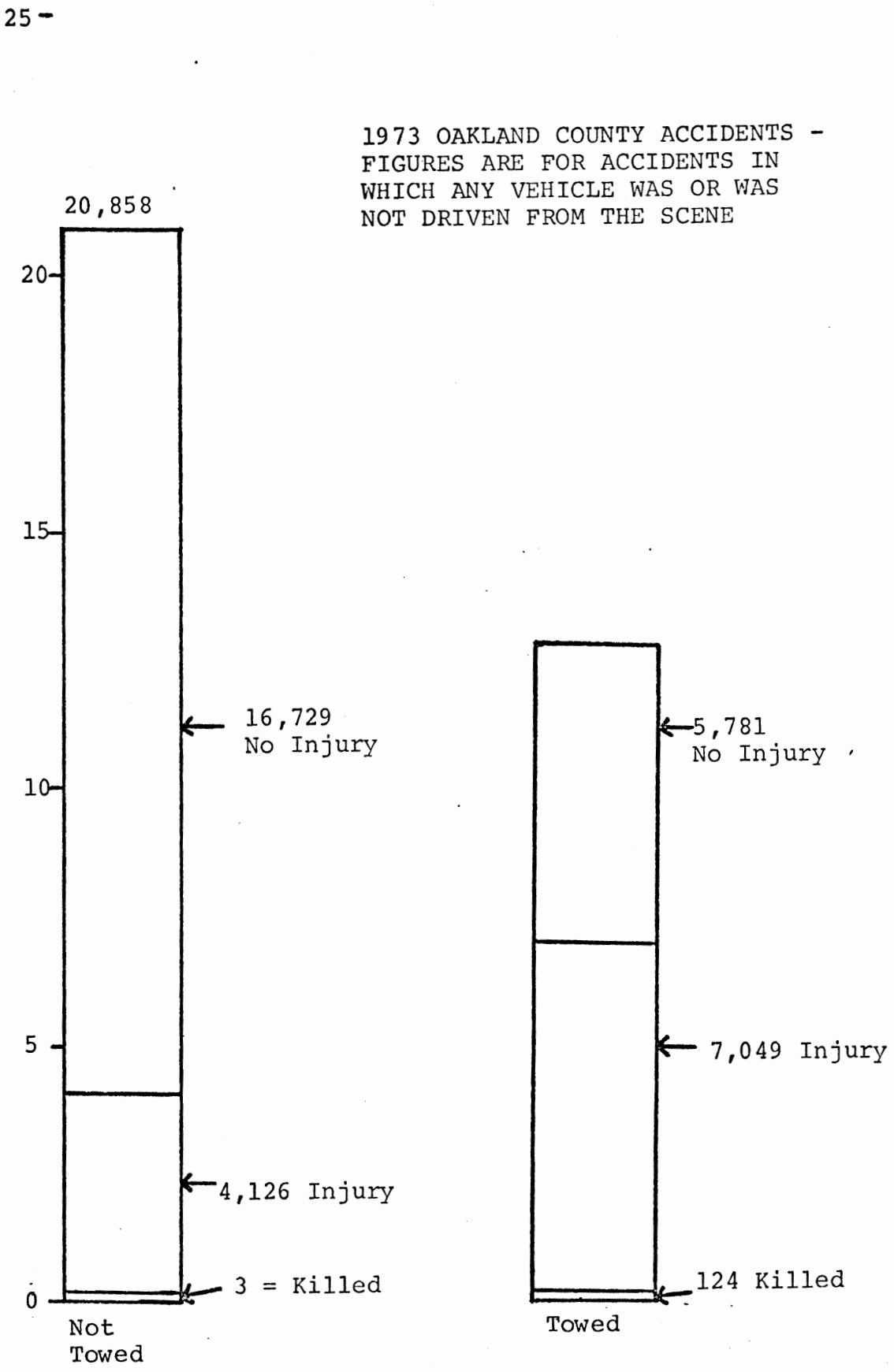
which they are involved); or what is the proportion of vehicles which leak fuel after a crash as a function of manufacturer or model year. There are indeed some questions which must look to both the accident and vehicle data for an answer, such as the distribution of injuries in small and large cars involved in rear-end collisions with small and large cars.

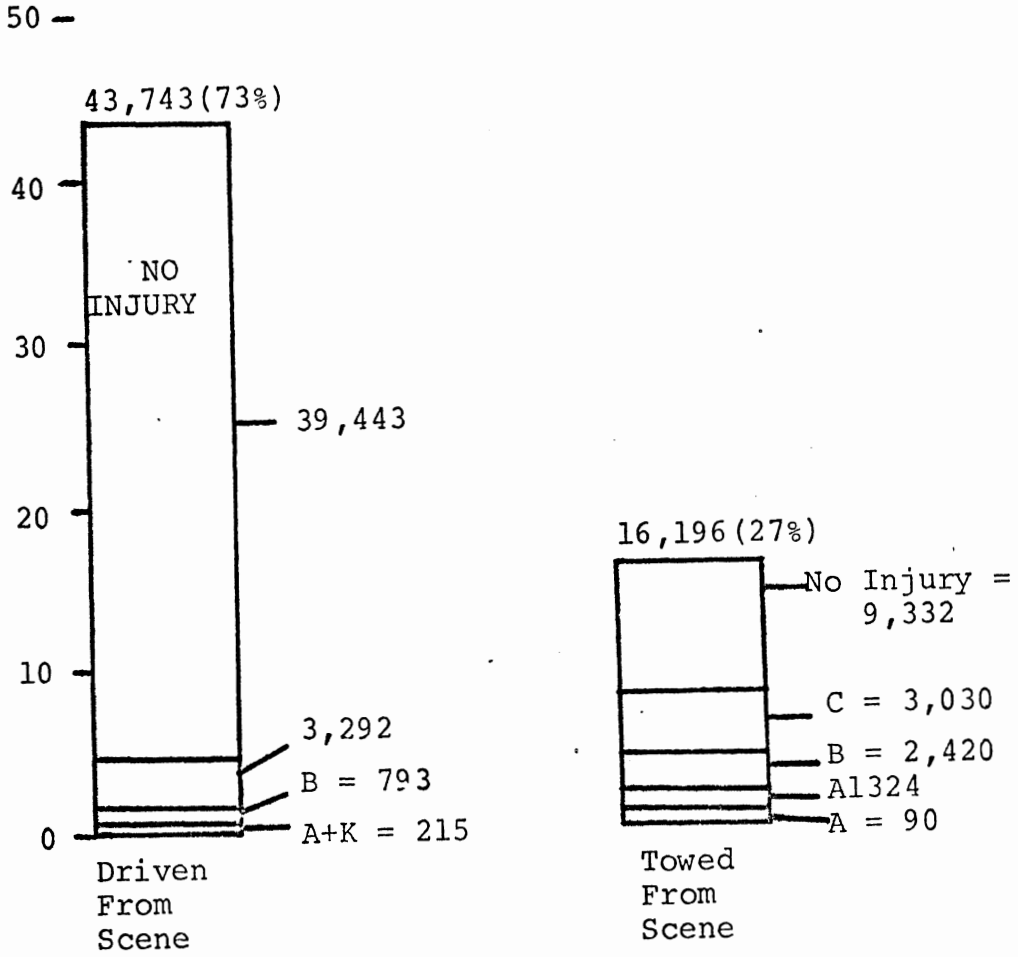
We have arrived at a tentative sample size for a set of accident involved vehicles by considering a number of factors--the kinds of questions we wish to ask (and thereby the level of detail we need in the data), the amount of money we have to investigate accidents, the period of time over which we wish to make observations and draw inferences, and the precision desired in our estimates. If there were a single question and a predictable output (e.g., if we knew about what injury differential we might expect for different kinds of restraint system usage), then we could proceed to a specific design. But, of course, we have many questions, and we will have some new ones after we see the data, and we must proceed with some broad assumptions about the requirements.

One thing is certain, however. If we do anything less than take a census of the data (i.e., if we sample) we must be able to relate the sample to the national population of interest. This may involve sampling at least three levels: selecting primary sampling units from the national population, selecting (at least in some instances) sub-geographic samples within the larger primary sampling units, and finally selecting a sample of vehicles for more complete examination. These selection methods are discussed in Sections 4 and 5.

In summary, the most viable population is to take all "towaway" accidents plus all police-reported

pedestrian-bicycle-motorcycle accidents, and to subsample from these in such a way that the total can be represented. It may be useful to develop a weighted sampling method within these constraints--aimed at solving particular kinds of problems with minimal data collection cost. This is discussed in Section 4.2.


25
20
15
10
5
0
1973 OAKLAND COUNTY ACCIDENTS - FIGURES ARE FOR ACCIDENTS IN WHICH ANY VEHICLE WAS OR WAS NOT DRIVEN FROM THE SCENE
20,858
16,729
No Injury
4,126 Injury
3 = Killed
Not
Towed
5,781
No Injury
7,049 Injury
124 Killed
Towed



DRIVER INJURIES IN VEHICLES IN OAKLAND COUNTY POLICE REPORTED ACCIDENT 1973

APPENDIX B

ACCIDENT DATA ENTRY PROGRAM

The HSRI ENTRY program is a set of routines to edit and receive field accident data. This program is used to receive CSS, QRS and sample frame accident data. The program is made up of one fairly large main program which performs all logical error checking (e.g., whether a valid VDI code is entered), a read routine (GET) to perform all data entry character checking, a rules routine (RULE) to check whether the case being entered is a valid case (i.e., whether the case fits the sampling scheme), and a series of small subroutines to handle the I/O drivers, attention interrupt processing, etc. All variables queried by the program and the output format of the variables are read off of a random-access utility disc file at execution time. Thus, if a change in the phrasing of a question, an addition of a valid response, or a new set of questions or variables are desired, the ENTRY program does not have to be modified or recompiled. Only, the utility disc file needs to be changed, and, sometimes, a new RULE program needs to be written. A utility file build program has been written to generate new or modify old utility files. The RULE program, in general, is no more than 15 to 20 lines of FORTRAN code and, therefore, it can be written in less than an hour's time.

Main Program

The main program is divided into three major sections: the data entry section, the accident listing section, and the accident correction section. The data entry section reads the questions and variable information off of the

utility file, prompts the investigator for input through the GET routine, and outputs the accident data. Questions are asked in one of three different formats depending on the investigator's preference. These three formats are questions (1) grouped three or four at a time, (2) verbose individual questions (full questions), and (3) abbreviated individual questions. An experienced investigator will always use the grouped format since it is the fastest means of entering the data.

When a data element is written into the computer in response to a question, it is checked against a list of valid responses. If a numeric answer is required, the GET routine checks that a valid numerical response is entered. If a response is given that is not in the list of valid responses, the investigator is queried as to whether the response is valid. At this time, the investigator may indicate that it is not valid in which case he is asked to reenter the response; or he may request the list of valid responses; or he may indicate that the response is valid in which case it is written onto the system manager's scratch pad for his judgment and it is indicated on the investigator's output file with a special code. In this way, the investigator may suggest a change or an addition of a valid response.

For most responses typed by the investigator, only the first few letters are compared with the list of valid responses. Thus, an experienced investigator can save much time by typing only the first few letters of a response. For example, "PED" is sufficient to indicate a pedestrian traffic unit type.

Instead of typing a verbal response, the investigator may enter a special character. The special characters are "*" or carriage return for the default response (e.g.,

"*" means a passenger car for traffic unit type) and "?" for missing data. Also, the investigator may enter a control command. All control commands begin with "&" and have the following meaning:

&FULL or &F - ask full or verbose question.
&ABBR or &A - switch to abbreviated question formats.
&ECHO or &E - echo all responses.
&NOECHO or &N - turn off echoing.
&LIST or &L - list all valid responses to the question.
&RESTART or &R - restart the secion of questions; e.g., if the questions for vehicle #1 are being asked, &R will cause the program to reask all questions for vehicle #1.
&BACKUP N or &B N - where N is an integer greater than 0. This causes the program to backup N questions or N groups of questions.
&CANCEL or &C - cancel all input for the accident and restart questioning of accident from the beginning.
&QUIT or &Q - sign the user off of the computer system. (for a frustrated investigator).

The data entry section of the program also does logical data checking. This data checking is controlled by a set of switches for each variable stored on the utility file. The switches are described in the utility file section.

There are up to four different types of output records written into the investigator's data file. The four are accident, vehicle, driver, and passenger records. If there are no driver or passenger related questions, only accident and vehicle records are outputted. Likewise, if only accident questions are asked, only accident records are outputted. The output format is in a packed binary format. This format permits from 100 to 200 distinct variables for each record type. Thus, it is possible to have 800 different variables within the limits of the current computer program. It is not likely that this many would be employed in NASS.

The data listing section of the program, prints on the investigator's terminal the list of responses entered. All responses are fully typed out even if the investigator entered only the first few letters. Thus, if "PED" were entered, "PEDESTRIAN" is listed.

The accident correction section of the program permits the investigator to change any response. Once an investigator has completed entering an accident, comments about the accident may be entered on the system manager's scratch pad. Once this is completed, the accident is checked under the sampling criteria by the RULE program, and then it is catalogued and assigned a unique number.

RULE Program

The RULE checks if the accident meets the sampling criteria.

A typical RULE routine is as follows:

```
      SUBROUTINE(ACC,VEH,DR,OCC,OUTPUT,*)
      LOGICAL*1 ACC,VEH,DR,OCC,OUTPUT(256)
      LOGICAL*1 REAR/Z04/
      INTEGER I/0/
      IF(.NOT.(ACC.OR.VEH.OR.DR.OR.OCC))GO TO 50
C
C     CHECK IF OUTPUT IS A VEHICLE RECORD
C
      IF(.NOT.VEH)RETURN
C
C     CHECK IF VEHICLE DAMAGED IN REAR
C
      IF(OUTPUT(56).EQ.REAR)I=1
10    RETURN
C
C     ALL ACCIDENT RECORDS HAVE BEEN READ -
C     CHECK IF THIS ACCIDENT MEETS SAMPLING CRITERION
C
```

```
50    IF(I.EQ.))GO TO 60
      I=0
      GO TO 10
C
C     PRINT MESSAGE THAT ACCIDENT IS INVALID
C
60    WRITE(6,61)
61    FORMAT(' ***ACCIDENT DOES NOT MEET SAMPLING CRITERION'/
     +       ' ***ACCIDENT IS CANCELLED')
      RETURN 1
      END
```

This routine checks all vehicle records as the accident is entered to see whether any vehicles in the accident have rear damage. If no vehicle has rear damage, an error message is printed, and the first return code is taken which cancels the accident.

UTILITY File

The utility file contains almost all the essential information for proper program operation. The contents of the file are as follows:

1) A list of investigators.
2) A list of each investigator's data file.
3) Program parameters: the number of questions in each of four main groups of questions--accident, vehicle, driver, and passenger. If the number of questions for any group is zero, the ENTRY program skips that group.
4) The group questions.
5) The individual questions and variable information; including:
   a) full question
   b) abbreviated question
   c) location in utility file of valid responses
   d) number of valid responses

e) default response

f) comparison length of answer

g) column number on output record

h) switches to:

i) process date entry (MM-DD-YY)

ii) process time entry (HH;MM PM or AM)

iii) indicate a default exists

iv) indicate missing data permitted for variable

v) indicate that numeric response is expected

vi) process model year entry

vii) process make/model of vehicle entry

viii) process VDI entry

ix) process height or length entry (F'IN")

x) indicate variable entry is number of vehicles in accident

xi) indicate variable entry is number of passengers in vehicle

xii) indicate output is a one byte number

xiii) indicate output is a two byte number

6) The valid responses.

7) Sampling weight factors - There are two sets of sampling weight factors stored in the utility file. The first set are the inverse percentage of type of accidents an investigator should investigate. For example, the investigator may be instructed by the entry program (through the RULE routine) to select:

a) every fatal accident - weight factor = 1.

b) every other accident where an involvee is taken to the hospital and the vehicle involved is no more than 4 years old - weight factor = 2.

c) every other accident involving a pedestrian or pedalcyclist - weight factor = 2.

d) every fourth accident of any other type - weight factor = 4.

Up to twenty categories of accidents may be entered in the present system, and it is possible to enter a different set of weight factors for each investigating unit.

The second set of factors is the inverse percentages of the investigating unit to the sampling strata and to the national population (the PSU weight factor).

The sampling weight information from the utility file is not used by the ENTRY program, but it is used by the EDIT program so that all relevant weights can be inserted automatically when an accident is built into the permanent files.

The utility file is generated by the utility file build routine. This routine, which is operated by the system manager, also permits editing of the file. The editing features include changing the spelling of any question or response, resetting a switch associated with any variable, changing the default value of a variable, adding additional valid responses to a variable, and changing the comparison length. A typical set of 50 to 60 questions takes about two hours for the system manager to enter into the utility file.

Other System Programs

LIST - This program lists on a line printer all newly entered accidents for each investigator.

EDIT - This program is used by the system manager to list, correct/edit, or build into the permanent file any unbuilt accident. When the system manager runs this program the scratch pad comments for any requested investigator are printed out. Also, the manager may type comments on the investigator's scratch pad which will appear whenever the investigator signs on.

REVISE - A program which permits the investigator to correct any previously entered unbuilt accident.

BUILD PARAMETER CARDS program - This is a small program which generates parameter cards to build the data into an occupant file. The program builds the cards based on the information in the utility file. These cards are read into EDIT whenever the system manager decides to build an accident case.

Sample Terminal Sessions

On the following pages are two sample runs showing the interactive nature of the data entry process. The program output is in uppercase and the investigator's entries are in lower case, with annotations at the right in script. The first run demonstrated the frame entry rule program used to determine if an accident should be fully investigated. The second run shows some of the features of the accident data entry program.

Program Source Listings

Following the two examples are the program listings of a few of the routines in the accident entry and processing system. Including are the main program, GET, LIST, and BEGIN routines for the ENTRY program, and the utility file build routine.

It should be noted, that as these programs are presently written, they can be run only on the Michigan Terminal System. However, with some modifications, they can run on almost any time-shared computer system with random-access peripheral devices.

```
HSRI - FRAME ENTRY PROGRAM
14:07:36
JUL 10, 1975

STATUS OF  SEXD
NO. ENTERED
NOT BUILT   NO. BUILT   NO. SIGNONS   LAST SIGNON
        3        18.            6      07-01-75

SCRATCH PAD COMMENTS:
07-02-75 09:11
CASES 9 AND 10 WERE BUILT TODAY - GIVE CALL ABOUT CASE 7

ENTER INVESTIGATOR'S INITIALS
?hg

FULL OR ABBREVIATED QUESTIONS:  (F OR A)
?f
ECHO:  (YES OR NO)
?no
GROUP OR INDIVIDUAL QUESTIONS:
?g
**ACC  #1
DATE;TIME;INJURY;ACC TYPE;NO. OF TRAFFIC UNITS:
?*;01:20;pedestrian;pedestr;2
VARIABLE:  INJURY
IS "P" CORRECT?  (YES, NO, &LIST)
?no
ENTER REPLACEMENT:
?b
**ACC  #1  VEH/DR  #1
TYPE;MODEL YR;OCC TO HOSP;DR SEX;DR AGE:
?*;77;no;m;23
INVALID MODEL YEAR!
10002/MODEL YR: (*=NA)
?74
**ACC  #1  VEH/DR  #2
TYPE;MODEL YR;OCC TO HOSP;DR SEX;DR AGE:
?pedestrian;*;m;8
ACCIDENT LISTING? (Y/N)
?y
**ACC  #1
1/DATE: 07-10-75
2/TIME: 01:20
3/INJURY: B
4/ACC TYPE: PEDESTRIAN
5/NO. OF TUS: 02
**ACC  #1  VEH/DR  #1
10001/TYPE: PASSENGER CAR
10002/MODEL YR: 74
10003/OCC TO HOSP: NO
10004/DR SEX: MALE
10005/DR AGE: 23
```

Program identification and time of run.

Status of the investigator.

A message from the team editor.

The investigator identifies himself. He uses brief responses to request a quick data entry mode.

Answers to first group of questions, a semicolon is used as a delimiter.

The program catches an incorrect response of "pedestrian" for "injury" and the investigator corrects this response.

An asterisk is used to request the default type of passenger car.

Note that the default model year for the pedestrian is not applicable. N/A could also be entered.

When all questions are answered the program asks if a listing is desired.

```
 **ACC  #1  VEH/DR  #2
 20001/TYPE: PEDESTRIAN
 20002/MODEL YR: NA
 20003/OCC TO HOSP: YES
 20004/DR SEX: MALE
 20005/DR AGE: 08
 CORRECTIONS? (Y/N)
?n
 ENTER COMMENTS:  (TERMINATE WITH "$ENDFILE")
?no comments for this accident
?$endfile
 ACCIDENT CATALOGED - ASSIGNED ID NO: 000022
 ANOTHER ACCIDENT TO ENTER?  (Y OR N)
?n

 ***ACC. #000022 MUST BE FULLY INVESTIGATED.
```

The responses are displayed with the variable number at the left. The one digit numbers are variables numbers at the accident level. The five digit numbers are vehicle number, passenger number, and variable number. The listing satisfies the investigator, there are no corrections.

A permanent accident ID is assigned.

The frame program consults its rule routine and this accident is included in the sample.

```
 HSRI - ACCIDENT ENTRY PROGRAM
 14:29:56
 JUL 10, 1975

 STATUS OF  SEXD
 NO. ENTERED
 NOT BUILT    NO. BUILT    NO. SIGNONS    LAST SIGNON
         3            2              4       07-03-75

 SCRATCH PAD COMMENTS:
 07-02-75 10:01
 CASES 2 AND 4 LOOKED OKAY - SO I ENTERED THEM TODAY
 ALSO DRIZZLE FOR PRECIPITATION WAS CHANGED TO RAIN
 ON CASE 2.

 ENTER INVESTIGATOR'S INITIALS:
?hg

 FULL OR ABBREVIATED QUESTIONS:  (F OR A)
?f
 ECHO:  (YES OR NO)
?no
 GROUP OR INDIVIDUAL QUESTIONS:
?g
 **ACC  #1
 UNIT;DATE;TIME:
?hsri;*;01:50 am
 LOCATION;ROAD TYPE;INTERSECTION;CHARACTER:
?
 CLOUD COND;PRECIPITATION;TEMPERATURE:
?cloudy
 TRAFFIC CON;ROAD DEFECTS;OBJECT;NO. OF VEH:
?*;*;tree;1
 VARIABLE: OBJECT
 IS "TREE          " CORRECT?   (YES, NO, &LIST)
?yes
 **ACC  #1  VEH/DR  #1
 VIN;REGISTRATION:
??;?
 MAKE;MODEL;MODEL YEAR;VEH 5-DIGIT;BODY STYLE:
?ford;mustang;74;12104;*
 R/L DRIVE;WEIGHT;PRIMARY VDI;SECOND VDI:
?*;3200;01fdaw3
 NO DEFAULT VALUE FOR THIS VARIABLE
 10011/SECOND VDI:
??
 PRIOR SPEED;IMPACT SP;BARRIER SP:
?60;40;40
 VEH. DEFECT;DOORS OPEN;FIRE;DAMAGE AREA;HEAD RESTR:
?*;*;*;front center;none
 DR POSITION;DR RESTR;DR AGE;DR WEIGHT;DR HEIGHT:
?*;*;45;165;61
 DR EJECTION;VISION;DR INJURIES;DR SPEC. INJ;NO. OF PASS:
?*;*;minor;head;1
```

Status of the investigator.

A message from the team editor.

A carriage return requests the default response for all variables in this group.

The cloud condition is cloudy; other responses are defaulted by a carriage return.

The investigator codes an object not in the program's list of valid responses and then confirms his answer. He could have requested the list by entering &list.

The investigator must enter a value for secondary VDI; he responds ? for unknown.

Two asterisks are used to request defaults; the other questions are answered.

```
 SECTION:  ACCIDENT  #1  VEHICLE/DRIVER  #1  PASSENGER  #1
 POSITION;RESTRAINT;AGE;WEIGHT;HEIGHT:
?rf;none;23;110;60
 EJECTION;INJURY;SPEC. INJURY:
?&l;serious;head
 LIST OF VALID ANSWERS:
 NONE
 LEFT WINDOW
 RIGHT WINDOW
 REAR WINDOW
 LEFT DOOR
 RIGHT DOOR
 TAILGATE
 WINDSCREEN
 ROOF
 10106/EJECTION AREA OR NONE:
?right window
 ACCIDENT LISTING? (Y/N)
?y
 **ACC  #1
 1/UNIT: HSRI
 2/DATE: 07-10-75
 3/TIME: 13:50
 4/LOCAT
 +ATTN+
 CORRECTIONS? (Y/N)
?y
 ENTER VARIABLE NUMBER OR NAME (OR STOP)
?time
 ENTER NEW VALUE:
?&echo
 &OK
?12:50 pm
 TIME: 12:50
 ENTER VARIABLE NUMBER OR NAME (OR STOP)
?stop
 ENTER COMMENTS:  (TERMINATE WITH "$ENDFILE")
?I think drizzle is a good answer.
?$endfile
 ACCIDENT CATALOGED - ASSIGNED ID NO: 000018
 ANOTHER ACCIDENT TO ENTER?  (Y OR N)
?n
```

&L is used to request the answer list for "ejection," the other two questions are answered.

Now the response to "ejection" is given.

When listing the case an error is detected. An attention interrupt causes the program to ask for corrections. The investigator turns &ECHO on and then corrects the time to 12:50.

The investigator continues the dialog with the team editor as to whether drizzle should be a different code than rain.

When there are no more accidents the program stops.

The following pages exhibit the main program and several subroutines of the ENTRY program as discussed in the text of this appendix. The order in which the programs are presented here are MAIN, BEGIN, LIST, GET, and NGET. This program can be used for entry of data to either the "frame" file or the "accident" file, depending on which utility file it is attached to.

Entry Programs

```
MICHIGAN TERMINAL SYSTEM FORTRAN G(41336)          MAIN          07-08-75        12:43:59

0001                  INTEGER*4 UFDUB,FDUB,DATE(2),LFW,CFW,FW,COL,ECHOL,MON(12)                1,000
0002                  INTEGER*4 IN(30),SLNUM,ELNUM,SMAK(7),NMAK(7),EMAK(7)                     2,000
0003                  INTEGER*4 ULINE,SMOD(10),EMOD(10),NMOD(10)                               3,000
0004                  INTEGER*4 GRIN(17),GRIVC,BLINE,FLINE,TNUM                                4,000
0005                  LOGICAL*1 ACC,VEH,DR,OCC,CODES(4000),OUTPUT(256),STRING(256),            5,000
                     1TERSE,ECHO,CORR,DSW,MAKSW,VDISW,MODSW,VEHSW,PASSW,ONESW,TWOSW,           6,000
                     1DASH,NSW,MDSW,DASW,TMSW,INS(120),MESS(45)                               7,000
0006                  INTEGER*2 LEN,MLEN,LLEN                                                  8,000
0007                  DATA MLEN/45/                                                            9,000
0008                  EQUIVALENCE (IN(1),INS(1),SLNUM),(IN(2),ELNUM),(IN(3),NCODES),(IN(      10,000
                     14),LFW),(IN(5),CFW),(IN(6),FW),(IN(7),COL),(IN(27),ECHOL),(INS(109      11,000
                     2),DSW),(INS(110),MDSW),(INS(111),DASW),(INS(112),TMSW),(INS(113),N      12,000
                     3SW),(MODSW,INS(114)),(INS(115),MAKSW),(INS(116),VDISW),                 13,000
                     4(INS(117),VEHSW),(INS(118),PASSW),                                      14,000
                     5(INS(119),ONESW),(INS(120),TWOSW)                                       14,500
0009                  EQUIVALENCE (STRING(200),MESS)                                           15,000
0010                  EQUIVALENCE (GRIN(1),IVS),(GRIN(2),IVL)                                  16,000
0011                  EQUIVALENCE (OUTPUT(13),BLINE),(OUTPUT(17),FLINE)                        17,000
0012                  COMMON /GETCOM/DATE,UFDUB,TERSE,ECHO,STRING                              18,000
0013                  LOGICAL*1 NEWANS(20,5),JON(4),JONE                                       18,200
0014                  INTEGER*2 JTWO,JDEF                                                      18,400
0015                  EQUIVALENCE (J,JON),(JON(3),JTWO),(JON(4),JONE),(IN(22),JDEF)            18,600
0016                  REAL*8 VNAMES(75),ZERO,MESS1(8),MESS2(5)                                 19,000
0017                  DATA ZERO/'00000000'/                                                    20,000
0018                  DATA MESS1/' SECTION','I  ACCID','ENT     ','  VEHICL','E/DRIVER',      21,000
                     1            '       P','ASSENGER','        '/                           22,000
0019                  DATA MESS2/' **ACC  ','      VEH','/DR     ','  PASS  ','        '/     23,000
0020                  INTEGER*4 VDIERR(7)                                                      24,000
0021                  LOGICAL*1 FF,ZZ,VDERR(28),BACKSW,BQUES                                   25,000
0022                  DATA FF/ZFF/,ZZ/Z00/                                                     25,500
0023                  EQUIVALENCE (VDIERR,VDERR)                                               26,000
0024                  DATA VDIERR/' VDI',' ERR','OR: ',' " "',' IS ','INVA','LID '/            27,000
0025                  INTEGER*4 PAR(5)                                                         28,000
0026                  INTEGER*2 PARM(10),ANUM,VNUM,DNUM,PNUM,ACOL,VCOL,DCOL,PCOL               29,000
0027                  EQUIVALENCE (PAR,PARM,ANUM),(PARM(2),VNUM),(PARM(3),DNUM),               30,000
                     1           (PARM(4),PNUM),(PARM(5),ACOL),(PARM(6),VCOL),               31,000
                     2           (PARM(7),DCOL),(PARM(8),PCOL)                               32,000
0028                  LOGICAL EQUC                                                             33,000
0029                  INTEGER*4 VDFLD(10)                                                      34,000
0030                  LOGICAL*1 GRQUES,VD(10,4)                                                35,000
0031                  EQUIVALENCE (VD,VDFLD)                                                   36,000
0032                  DATA VDFLD/'0FRB','LTUX','  0D','LCRF','PBYZ','0AHE',                    37,000
                     1           'GMLX','  0W','NSOF','YZAE'/                                38,000
0033                  LOGICAL*1 YES/'Y'/,NO/'N'/                                               39,000
0034                  INTEGER*4 QUESM/'?   '/                                                  39,250
0035                  DATA MON/31,28,31,30,31,30,31,31,30,31,30,31/                            40,000
0036                  DATA DASH/'-'/                                                           41,000
0037                  DATA NMAK/7*0/                                                           42,000
0038                  ISW=0                                                                    42,200
0039                  CALL ESCAPE(ISW,&3000)                                                   42,400
0040                  ISW=1                                                                    42,600
0041                  CALL BEGIN(FDUB,OUTPUT,LINE,ULINE)                                       44,000
0042                  LNUM=-20000                                                              45,000
0043                  CALL READ(PAR,LEN,16386,LNUM,UFDUB)                                      46,000
0044                  I=ANUM+VNUM+DNUM+PNUM                                                    47,000
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0045              TNUM=I                                                    48,000
0046              J=1                                                       49,000
0047              LNUM=-19999                                               50,000
0048            2 CALL READ(VNAMES(J),LEN,16386,LNUM,UFDUB)                 51,000
0049              I=I-8                                                     52,000
0050              IF(I)4,4,3                                                53,000
0051            3 J=J+8                                                     54,000
0052              LNUM=LNUM+1                                               55,000
0053              GO TO 2                                                   56,000
0054            4 NACC=0                                                    57,000
0055              LINE=LINE+1                                               57,100
0056              FLINE=0                                                   57,250
0057            1 LEN=31                                                    58,000
0058              CALL SPRINT(' GROUP OR INDIVIDUAL QUESTIONS:',LEN,0)      59,000
0059              CALL GET(I,&1,&1,&1,&1,&1,&1,&1)                          60,000
0060              GRQUES=.FALSE.                                            60,250
0061              IF(EQUC(STRING,'I'))GRQUES=.TRUE.                         61,000
0062              NACC=NACC+1                                               62,000
0063              CORR=.FALSE.                                              63,000
0064              ISW=0                                                     63,500
0065           10 IF(CORR)GO TO 1500                                        64,000
0066              CALL IWRT(MESS1,21,4,NACC,2,'#')                          65,000
0067              CALL IWRT(MESS2,8,4,NACC,2,'#')                           66,000
0068              CALL BINDEC(OUTPUT,1,6,NACC)                              67,000
0069              CALL FILLB(OUTPUT,28,256)                                 68,000
0070              GRIVC=11000                                               69,000
0071              IVC=1000                                                  70,000
0072              BLINE=0                                                   71,000
0073              FLINE=LINE+1                                              72,000
0074              INEW=0                                                    72,500
0075              INV=0                                                     73,000
0076              INO=0                                                     74,000
0077              ACC=.TRUE.                                                75,000
0078              IST=0                                                     76,000
0079              VEH=.FALSE.                                               77,000
0080              DR=.FALSE.                                                78,000
0081              OCC=.FALSE.                                               79,000
0082           50 IF(CORR)GO TO 1500                                        80,000
0083              IF(DR)VEH=.TRUE.                                          81,000
0084              IF(.NOT.ACC)GO TO 51                                      82,000
0085              IWID=1                                                    83,000
0086              GRIVC=11000                                               84,000
0087              IVC=1000                                                  85,000
0088              GO TO 55                                                  86,000
0089           51 IF(.NOT.VEH)GO TO 52                                      87,000
0090              DR=.FALSE.                                                88,000
0091              GRIVC=12000                                               89,000
0092              IVC=2000                                                  90,000
0093              GO TO 55                                                  91,000
0094           52 IF(.NOT.DR)GO TO 53                                       92,000
0095              GRIVC=13000                                               93,000
0096              IVC=3000                                                  94,000
0097              GO TO 80                                                  95,000
0098           53 GRIVC=14000                                               96,000
0099              IVC=4000                                                  97,000
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0100              IF(TERSE)GO TO 55                                          98,000
0101              LEN=24                                                     99,000
0102              IF(VEH)LEN=45                                             100,000
0103              IF(OCC)LEN=64                                             101,000
0104              CALL SPRINT(MESS1,LEN,0)                                  102,000
0105              GO TO 80                                                  103,000
0106           55 LEN=11                                                    104,000
0107              IF(VEH)LEN=24                                             105,000
0108              IF(OCC)LEN=35                                             106,000
0109              CALL SPRINT(MESS2,LEN,0)                                  107,000
                C                                                           108,000
                C   CODE ACCIDENT                                          109,000
                C                                                           110,000
0110           80 CALL READ(GRIN,LEN,16386,-GRIVC,UFDUB,&1000)              111,000
0111           83 BQUES=.FALSE.                                             111,250
0112              BACKSW=.FALSE.                                            111,500
0113              IF(GRQUES)GO TO 81                                        111,600
0114              LEN=60                                                    112,000
0115              CALL SPRINT(GRIN(3),LEN,0)                                113,000
0116           81 DO 199 IVAR=IVS,IVL                                       113,500
0117              IF(ISW.EQ.0)CALL ESCAPE(ISW,&83,&110)                     113,550
0118              ISW=1                                                     113,600
0119              IF(IVAR-IVS)82,82,100                                     113,700
0120           82 IF(GRQUES)GO TO 100                                       113,800
0121              CALL GRGET(IVL,&110,&160,&10,&170,&180,&150,&50,&110)      114,000
0122          100 LNUM=-IVC-IVAR                                            116,000
0123              ISW=2                                                     116,500
0124              CALL READ(IN,LEN,16386,LNUM,UFDUB,&1000)                  117,000
0125              IF(MAKSW)GO TO 300                                        118,000
0126          102 IF(NCODES.LE.0)GO TO 109                                  119,000
0127              I=1                                                       120,000
0128              DO 101 LNUM=SLNUM,ELNUM                                   121,000
0129              CALL READ(CODES(I),LEN,16386,LNUM,UFDUB)                  122,000
0130          101 I=I+LEN                                                   123,000
0131          109 IF(CORR)GO TO 120                                         124,000
0132              IF(GRQUES.OR.BQUES)GO TO 110                              124,250
0133              CALL GRCHK(I,NSW,&110,&160,&10,&170,&180,&150,&50,&110)    125,000
0134              IF(NSW)GO TO 142                                          126,000
0135              GO TO 122                                                 127,000
0136          110 CALL FILLB(MESS,1,45)                                     128,000
0137              I=IVAR+(INV*10000)+(INO*100)                              129,000
0138              IF(DR)I=I+VNUM                                            130,000
0139              IF(ACC.AND.IVAR.GT.9)IWID=2                               130,500
0140              CALL IWRT(MESS,2,IWID,I,1)                                131,000
0141              IF(TERSE)GO TO 115                                        132,000
0142          111 CALL MOVEC(40,IN(8),MESS(IWID+2))                         133,000
0143              GO TO 116                                                 134,000
0144          115 CALL MOVEC(16,IN(18),MESS(IWID+2))                        135,000
0145          116 CALL SPRINT(MESS,MLEN,0)                                  136,000
0146          120 IF(NSW)GO TO 140                                          137,000
                C                                                           138,000
                C   READ WORD RESPONSE                                     139,000
                C                                                           140,000
0147              CALL GET(I,&110,&160,&10,&170,&180,&150,&50,&110)          141,000
0148          122 IF(DASW)GO TO 200                                         142,000
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0149              IF(TMSW)GO TO 250                                          143.000
0150              IF(VDISW)GO TO 400                                         143.250
0151              IF(NCODES.LE.0)GO TO 185                                   144.000
                C*** SEARCH FOR CODE                                         145.000
0152          121 I=1                                                        145.010
0153              DO 123 J=1,NCODES                                          145.020
0154              IF(LCOMC(CFW,STRING,CODES(I)))123,131,123                  145.030
0155          123 I=I+LFW                                                    145.040
                C                                                            145.050
                C   NO ANSWER                                               145.060
                C                                                            145.070
0156          125 CALL FILLB(STRING,100,200)                                 145.080
0157              CALL MOVEC(10,' VARIABLE:',STRING(100))                    145.081
0158              CALL MOVEC(ECHOL,IN(18),STRING(111))                       145.082
0159              LEN=ECHOL+12                                               145.083
0160              CALL SPRINT(STRING(100),LEN,0)                             145.084
0161              CALL MOVEC(5,' IS "',STRING(100))                          145.090
0162              CALL MOVEC(LFW,STRING,STRING(105))                         145.100
0163              J=105+LFW                                                  145.110
0164              CALL MOVEC(28,'" CORRECT?  (YES, NO, &LIST)',STRING(J))    145.120
0165          126 LEN=34+LFW                                                 145.130
0166              CALL SPRINT(STRING(100),LEN,0)                             145.140
0167              CALL GET(I,&110,&160,&10,&126,&126,&126,&10,&126)           145.150
0168              IF(LCOMC(1,'Y',STRING))127,128,127                         145.160
0169          127 IF(LCOMC(1,'N',STRING))126,129,126                         145.170
0170          129 LEN=19                                                     145.180
0171              CALL SPRINT(' ENTER REPLACEMENT:',LEN,0)                   145.190
0172              GO TO 140                                                  145.200
                C                                                            145.210
                C   FLAG BAD CODE IN COMMENTS AREA                          145.220
                C                                                            145.230
0173          128 INEW=INEW+1                                                145.260
0174              CALL FILLB(NEWANS(1,INEW),1,20)                            145.261
0175              CALL MOVEC(20,STRING,NEWANS(1,INEW))                       145.262
0176              J=INEW                                                     145.265
0177              IF(ONESW)J=J+240                                           145.266
0178              IF(ONESW)OUTPUT(COL)=JONE                                  145.267
0179              J=-1*J                                                     145.268
0180              IF(TWOSW)CALL MOVEC(2,JTWO,OUTPUT(COL))                    145.269
0181              CALL FILLB(STRING,1,100)                                   145.270
0182              CALL MOVEC(31,OUTPUT,STRING(2))                            145.280
0183              CALL MOVEC(20,OUTPUT(COL),STRING(32))                      145.290
0184              CALL BINDEC(STRING(32),21,4,IVAR)                          145.300
0185              CALL MOVEC(ECHOL+1,IN(18),STRING(47))                      145.302
0186              LNUM=-50000                                                145.305
0187              CALL READ(I,LEN,16386,LNUM,FDUB,&132)                      145.310
0188              I=I+1                                                      145.315
0189              GO TO 133                                                  145.320
0190          132 I=-49999                                                   145.325
0191          133 LEN=4                                                      145.330
0192              LNUM=-50000                                                145.335
0193              LEN=4                                                      145.340
0194              CALL WRITE(I,LEN,16386,LNUM,FDUB)                          145.341
0195              STRING(1)=ZZ                                               145.342
0196              LEN=48+ECHOL                                               145.343
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0197                CALL WRITE(STRING,LEN,16386,I,FDUB)                          145,344
0198                CALL FILL0(OUTPUT(COL),LFW+1,LFW*FW)                         145,350
0199                GO TO 130                                                    145,360
                C                                                                145,370
                C   HAVE A CORRECT ANSWER                                       145,380
                C                                                                145,390
0200              131 IF(ONESW)OUTPUT(COL)=JONE                                  145,400
0201                  IF(TWOSW)CALL MOVEC(2,JTWO,OUTPUT(COL))                    145,900
0202                  GO TO 130                                                  146,400
                C                                                                148,000
                C   CHECK FOR ECHO OPTION                                       149,000
                C                                                                150,000
0203              130 IF(.NOT.ECHO)GO TO 190                                     151,000
0204                  CALL FILLB(STRING,1,50)                                    152,000
0205                  CALL MOVEC(ECHOL,INS(70),STRING(2))                        153,000
0206                  I=ECHOL+3                                                  154,000
0207                  IF(NSW.OR.NCODES.LE.0)GO TO 135                            154,100
0208                  J=0                                                        154,200
0209                  IF(ONESW)JONE=OUTPUT(COL)                                  154,300
0210                  IF(J.GT.240)GO TO 137                                      154,350
0211                  IF(TWOSW)CALL MOVEC(2,OUTPUT(COL),JTWO)                    154,400
0212                  IF(JTWO.LT.0)GO TO 138                                     154,450
0213                  J=(J-1)*LFW+1                                              154,500
0214                  CALL MOVEC(LFW,CODES(J),STRING(I))                         154,600
0215                  IF(J.LE.0)CALL MOVEC(7,'UNKNOWN',STRING(I))                154,650
0216                  GO TO 136                                                  154,700
0217              135 CALL MOVEC(LFW,OUTPUT(COL),STRING(I))                      155,000
0218              136 LEN=50                                                     156,000
0219                  CALL SPRINT(STRING,LEN,0)                                  157,000
0220                  GO TO 190                                                  158,000
0221              137 J=J-240                                                    158,100
0222                  GO TO 139                                                  158,200
0223              138 J=-1*J                                                     158,300
0224              139 CALL MOVEC(20,NEWANS(1,J),STRING(I))                       158,400
0225                  GO TO 136                                                  158,500
                C                                                                159,000
                C   READ NUMERICAL RESPONSE                                     160,000
                C                                                                161,000
0226              140 CALL NGET(I,&110,&110,&10,&145,&180,&150,&50,&110)          162,000
0227              142 IF(I.LT.0)GO TO 230                                        164,000
0228                  IF(MODSW)GO TO 390                                         165,000
0229                  IF(I.GT.(10**FW)-2)I=(10**FW)-2                            166,000
0230              141 CALL BINDEC(OUTPUT,COL,FW,I)                               167,000
0231                  IF(VERSW)NV=I                                              167,250
0232                  IF(PASSW)KNO=I                                             167,500
0233                  GO TO 130                                                  168,000
0234              145 IF(.NOT.DSW)GO TO 175                                      169,000
0235                  I=0                                                        170,000
0236                  GO TO 141                                                  171,000
                C                                                                172,000
                C   BACKUP SECTION                                             173,000
                C                                                                174,000
0237              150 IF(GROUES)GO TO 152                                        175,000
0238                  IF(BACKSW)GO TO 154                                        176,000
0239                  IF(GRIVC-((GRIVC/10000)*10000)-I)155,151,151               177,000
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0240          151 GRIVC=GRIVC-I                                                  178,000
0241              GO TO 80                                                       178,250
0242          152 IF(IVAR-I-1)155,153,153                                        178,500
0243          153 IVAR=IVAR-I                                                    178,600
0244              GO TO 100                                                      178,700
0245          154 IF(IVAR-IVS-I)155,156,157                                      178,800
0246          156 BACKSW=.FALSE.                                                 178,810
0247          157 IVAR=IVAR-I                                                    178,820
0248              BQUES=.TRUE.                                                   178,830
0249              GO TO 100                                                      178,840
0250          155 LEN=27                                                         179,000
0251              CALL SPRINT(' TOO MANY BACKUPS SPECIFIED',LEN,0)               180,000
0252              IF(BACKSW.OR.GRQUES)GO TO 110                                  180,250
0253              GO TO 80                                                       181,000
                C                                                              182,000
                C   LIST OPTION                                                183,000
                C                                                              184,000
0254          160 IF(NCODES.LE.0)GO TO 110                                       185,000
0255              ISW=2                                                          185,500
0256              CALL LIST(NCODES,CODES,LFW)                                    186,000
0257              GO TO 110                                                      187,000
                C                                                              188,000
                C   DEFAULT OPTION                                             189,000
                C                                                              190,000
0258          170 IF(DASW.AND.ACC)GO TO 225                                      191,000
0259              IF(.NOT.DSW)GO TO 175                                          192,000
0260              IF(NSW.OR.NCODES.LE.0)GO TO 171                                193,000
0261              IF(ONESW)OUTPUT(COL)=INS(85)                                   194,000
0262              IF(TWOSW)CALL MOVEC(2,JDEF,OUTPUT(COL))                        194,200
0263              GO TO 130                                                      195,000
0264          171 CALL MOVEC(LFW,IN(22),OUTPUT(COL))                             196,000
0265              GO TO 130                                                      197,000
0266          175 LEN=35                                                         198,000
0267              CALL SPRINT(' NO DEFAULT VALUE FOR THIS VARIABLE',LEN,0)       199,000
0268              GO TO 110                                                      200,000
                C                                                              201,000
                C   MISSING DATA DEFAULT OPTION                                202,000
                C                                                              203,000
0269          180 IF(.NOT.MDSW)GO TO 181                                         204,000
0270              IF(VDISW)GO TO 425                                             204,250
0271              IF(NSW.OR.NCODES.LE.0)GO TO 182                                204,300
0272              J=0                                                            204,400
0273              IF(ONESW)OUTPUT(COL)=JONE                                      204,500
0274              IF(TWOSW)CALL MOVEC(2,JTWO,OUTPUT(COL))                        204,600
0275              GO TO 130                                                      204,700
0276          182 CALL MOVEC(LFW,STRING,OUTPUT(COL))                             205,000
0277              IF(NSW)GO TO 130                                               206,000
0278              I=COL+LFW                                                      207,000
0279              CALL MOVEC(FW,ZERO,OUTPUT(I))                                  208,000
0280              GO TO 130                                                      209,000
0281          181 LEN=41                                                         209,250
0282              CALL SPRINT(' MISSING DATA NOT PERMITTED FOR THIS VAR ',LEN,0) 209,500
0283              GO TO 110                                                      209,600
                C                                                              210,000
                C   MOVE STRAIGHT ANSWER TO OUTPUT                             211,000
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                C                                                                212,000
0284              185 CALL MOVEC(LFW,STRING,OUTPUT(COL))                         213,000
0285                  GO TO 130                                                  214,000
                C                                                                223,000
                C   CHECK DATE SECTION                                          224,000
                C                                                                225,000
0286              200 CALL MOVEC(8,DATE,STRING(101))                             226,000
0287                  IF(LCOMC(2,STRING(7),STRING(107)))203,201,240              227,000
0288              201 IF(LCOMC(2,STRING,STRING(101)))203,202,240                 228,000
0289              202 IF(LCOMC(2,STRING(4),STRING(104)))203,203,240              229,000
0290              203 CALL POSCON(STRING,1,2,IMON,&230)                          230,000
0291                  IF(IMON.LT.1.OR.IMON.GT.12)GO TO 240                       231,000
0292                  CALL POSCON(STRING,4,2,IDAY,&230)                          232,000
0293                  CALL POSCON(STRING,7,2,IYR,&230)                           233,000
0294                  IF(IYR.LT.74)GO TO 240                                     234,000
0295                  IF(MOD(IYR,4))210,205,210                                  235,000
0296              205 IF(IMON.NE.2)GO TO 210                                     236,000
0297                  IF(IDAY.LT.1.OR.IDAY.GT.29)GO TO 240                       237,000
0298                  GO TO 220                                                  238,000
0299              210 IF(IDAY.LT.1.OR.IDAY.GT.MON(IMON))GO TO 240                239,000
0300              220 STRING(3)=DASH                                             240,000
0301                  STRING(6)=DASH                                             241,000
0302                  CALL MOVEC(LFW,STRING,OUTPUT(COL))                         242,000
0303                  GO TO 130                                                  243,000
0304              225 CALL MOVEC(LFW,DATE,OUTPUT(COL))                           244,000
0305                  GO TO 130                                                  245,000
0306              230 LEN=14                                                     246,000
0307                  CALL SPRINT(' SYNTAX ERROR ',LEN,0)                        247,000
0308                  GO TO 111                                                  248,000
0309              240 LEN=14                                                     249,000
0310                  CALL SPRINT(' INVALID DATE ',LEN,0)                        250,000
0311                  GO TO 111                                                  251,000
                C                                                                252,000
                C   CHECK TIME SECTION                                          253,000
                C                                                                254,000
0312              250 IF(.NOT.ACC)GO TO 510                                      254,500
0313                  CALL POSCON(STRING,1,2,IDAY,&230)                          255,000
0314                  IF(IDAY.LT.0.OR.IDAY.GT.23)GO TO 265                       256,000
0315                  CALL SCANR('P',STRING,3,10,I,&255)                         257,000
0316                  IF(LCOMC(2,'PM',STRING(I)))230,251,230                     258,000
0317              251 IF(IDAY.LE.0)GO TO 265                                     259,000
0318                  IF(IDAY-12)254,253,265                                     260,000
0319              253 IDAY=0                                                     261,000
0320              254 IDAY=IDAY+12                                               262,000
0321                  GO TO 258                                                  263,000
0322              255 CALL SCANR('A',STRING,3,10,I,&260)                         264,000
0323                  IF(LCOMC(2,'AM',STRING(I)))230,256,230                     265,000
0324              256 IF(IDAY.LE.0)GO TO 265                                     266,000
0325                  IF(IDAY-12)258,257,265                                     267,000
0326              257 IDAY=0                                                     268,000
0327              258 CALL BINDEC(STRING,1,2,IDAY)                               269,000
0328              260 IF(LCOMC(2,': ',STRING(3)),EQ.0)GO TO 262                  270,000
0329                  IF(LCOMC(1,' ',STRING(3)).EQ.0)GO TO 262                   271,000
0330                  CALL POSCON(STRING,4,2,IDAY,&230)                          272,000
0331                  IF(IDAY.GT.59)GO TO 265                                    273,000
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0332                GO TO 264                                                  274,000
0333              262 CALL MOVEC(3,'   ',STRING(3))                            275,000
0334              264 CALL MOVEC(LFW,STRING,OUTPUT(COL))                       276,000
0335                GO TO 130                                                  277,000
0336              265 LEN=14                                                   278,000
0337                CALL SPRINT(' INVALID TIME ',LEN,0)                        279,000
0338                GO TO 111                                                  280,000
                  C                                                            281,000
                  C   MAKE/MODEL SECTION                                       282,000
                  C                                                            283,000
0339              300 IF(CORR)GO TO 350                                        284,000
0340                  IF(CFW-1)301,310,320                                     285,000
0341              301 CFW=2                                                    286,000
0342                  IDAY=COL+9                                               287,000
0343                  GO TO 102                                                288,000
0344              310 CALL DECBIN(OUTPUT,IDAY,1,I)                             289,000
0345              313 LNUM=50000+(I*50)                                        290,000
0346              312 CFW=10                                                   291,000
0347                  NCODES=0                                                 292,000
0348                  I=1                                                      293,000
0349              311 CALL READ(CODES(I),LEN,16386,LNUM,&109)                  294,000
0350                  NCODES=NCODES+LEN/LFW                                    295,000
0351                  I=I+LEN                                                  296,000
0352                  LNUM=LNUM+1                                              297,000
0353                  GO TO 311                                                298,000
0354              320 CALL DECBIN(OUTPUT,IDAY+16,2,I)                          299,000
0355                  CALL DECBIN(OUTPUT,IDAY,1,J)                             299,250
0356              321 LNUM=50500+(I*30)+(J*6000)                               300,000
0357                  GO TO 312                                                301,000
0358              350 IF(CFW-1)301,351,360                                     302,000
0359              351 CALL DECBIN(OUTPUT,COL-2,2,I)                            303,000
0360                  GO TO 313                                                304,000
0361              360 CALL DECBIN(OUTPUT,COL-2,2,I)                            305,000
0362                  GO TO 321                                                306,000
                  C                                                            307,000
                  C   CHECK MODEL YEAR                                        308,000
                  C                                                            309,000
0363              390 IF(I-75)141,141,391                                      310,000
0364              391 LEN=20                                                   311,000
0365                  CALL SPRINT(' INVALID MODEL YEAR ',LEN,0)                312,000
0366                  GO TO 110                                                313,000
                  C                                                            314,000
                  C   VDI SECTION                                             315,000
                  C                                                            316,000
0367              400 CALL POSCON(STRING,1,1,I,&421)                           317,000
0368                  CALL POSCON(STRING,2,1,J,&401)                           318,000
0369                  I=3                                                      319,000
0370                  GO TO 402                                                320,000
0371              401 J=I                                                      321,000
0372                  I=2                                                      322,000
0373              402 IF(J-12)403,403,421                                      323,000
0374              403 CALL BINDEC(OUTPUT,COL,2,J)                              324,000
0375                  CALL MOVEC(2,OUTPUT(COL),OUTPUT(COL+6))                  325,000
0376                  DO 410 K=1,4                                             326,000
0377                  DO 405 J=1,10                                            328,000
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0378              IF(EQUC(STRING(I),VD(J,K)))GO TO 406                                  329,000
0379          405 CONTINUE                                                              330,000
0380              VDERR(15)=STRING(I)                                                   331,000
0381              LEN=28                                                                332,000
0382              CALL SPRINT(VDERR,LEN,0)                                              333,000
0383              GO TO 110                                                             334,000
0384          406 CALL BINDEC(OUTPUT,COL+K+7,1,J-1)                                     335,000
0385              OUTPUT(COL+K+1)=STRING(I)                                             336,000
0386              I=I+1                                                                 337,000
0387          410 CONTINUE                                                              340,000
0388              CALL POSCON(STRING,I,1,J,&422)                                        341,000
0389              OUTPUT(COL+5)=STRING(I)                                               342,000
0390              OUTPUT(COL+11)=STRING(I)                                              343,000
0391              GO TO 130                                                             344,000
0392          421 IF(J.EQ.99)GO TO 403                                                  344,250
0393              LEN=31                                                                345,000
0394              CALL SPRINT(' VDI ERROR:  INVALID DIRECTION ',LEN,0)                  346,000
0395              GO TO 110                                                             347,000
0396          422 LEN=27                                                                348,000
0397              CALL SPRINT(' VDI ERROR:  INVALID EXTENT ',LEN,0)                     349,000
0398              GO TO 110                                                             350,000
0399          425 CALL MOVEC(12,'990000990000',OUTPUT(COL))                             350,250
0400              GO TO 130                                                             350,500
                C                                                                       350,501
                C   CALCULATE HEIGHT                                                   350,502
                C                                                                       350,503
0401          510 IDAY=0                                                              350,520
0402              IMON=1                                                                350,540
0403              CALL SCANR('''',STRING,1,30,I,&512)                                   350,560
0404              IF(I-1)515,515,511                                                    350,580
0405          511 CALL POSCON(STRING,1,I-1,IDAY,&515)                                   350,600
0406              IDAY=IDAY*12                                                          350,620
0407              IMON=I+1                                                              350,640
0408          512 CALL SCANR('"',STRING,IMON,30,I)                                      350,660
0409              IF(I-IMON)515,515,513                                                 350,680
0410          513 CALL POSCON(STRING,IMON,I-IMON,J,&515)                                350,700
0411              IDAY=IDAY+J                                                           350,720
0412              IF(IDAY-FW*100)514,515,515                                            350,740
0413          514 CALL BINDEC(OUTPUT,COL,FW,IDAY)                                       350,760
0414              GO TO 130                                                             350,780
0415          515 LEN=16                                                                350,800
0416              CALL SPRINT(' INVALID HEIGHT ',LEN,0)                                 350,820
0417              GO TO 110                                                             350,840
                C                                                                       350,900
                C   GET SET FOR NEXT VARIABLE                                         350,910
                C                                                                       350,920
0418          190 IF(CORR)GO TO 1319                                                    350,930
0419              IF(ACC.AND.IVAR.GE.9)IWID=2                                           350,940
0420              BACKSW=.TRUE.                                                         350,950
0421          199 CONTINUE                                                              350,960
0422              GRIVC=GRIVC+1                                                         350,970
0423              GO TO 80                                                              350,980
                C                                                                       351,000
                C   CHECK TO CODE VEHICLES AND OCCUPANTS                               352,000
                C                                                                       353,000
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0424        1000 IF(VEH)GO TO 1010                                          354,000
0425             IF(DR)GO TO 1020                                           355,000
0426             IF(OCC)GO TO 1030                                          356,000
0427             ACC=.FALSE.                                                358,000
0428             INV=0                                                      359,000
0429             IWID=5                                                     360,000
0430             LEN=ACOL-1                                                 361,000
0431             CALL WRITE(OUTPUT,LEN,16386,LINE,FDUB)                     362,000
0432             BLINE=LINE                                                 363,000
0433             KNUM=LINE+1                                                364,000
0434             FLINE=KNUM+1                                               365,000
0435             IF(VNUM)1100,1100,1001                                     366,000
0436        1001 INV=INV+1                                                  367,000
0437             IF(INV.GT.9)IWID=6                                         368,000
0438             IF(INV-NV)1002,1002,1100                                   369,000
0439        1002 IST=INV*10000                                              370,000
0440             VEH=.TRUE.                                                 371,000
0441             DR=.FALSE.                                                 372,000
0442             OCC=.FALSE.                                                373,000
0443             CALL BINDEC(OUTPUT,28,2,INV)                               374,000
0444             CALL FILLB(OUTPUT,32,256)                                  375,000
0445             CALL IWRT(MESS1,42,4,INV,2,'#')                            376,000
0446             CALL IWRT(MESS2,21,4,INV,2,'#')                            377,000
0447             GO TO 51                                                   378,000
                C                                                           379,000
0448        1010 IF(DR)GO TO 1020                                           380,000
0449             IF(DCOL)1001,1001,1011                                     380,500
0450        1011 LEN=VCOL-1                                                 381,000
0451             CALL WRITE(OUTPUT,LEN,16386,KNUM,FDUB)                     382,000
0452             BLINE=KNUM                                                 383,000
0453             KNUM=KNUM+1                                                384,000
0454             CALL FILLB(OUTPUT,32,256)                                  385,000
0455             FLINE=KNUM+1                                               386,000
0456             VEH=.FALSE.                                                387,000
0457             DR=.TRUE.                                                  388,000
0458             GO TO 52                                                   389,000
                C                                                           390,000
0459        1020 LEN=DCOL-1                                                 391,000
0460             CALL WRITE(OUTPUT,LEN,16386,KNUM,FDUB)                     392,000
0461             BLINE=KNUM                                                 393,000
0462             KNUM=KNUM+1                                                394,000
0463             FLINE=KNUM+1                                               395,000
0464             IF(KNO)1001,1001,1021                                      398,000
0465        1021 INO=0                                                      399,000
0466             DR=.FALSE.                                                 400,000
0467             OCC=.TRUE.                                                 401,000
0468        1025 INO=INO+1                                                  402,000
0469             CALL IWRT(MESS1,58,4,INO,2,'#')                            403,000
0470             CALL IWRT(MESS2,32,4,INO,2,'#')                            404,000
0471             IST=(INV*10000)+(INO*100)                                  405,000
0472             CALL BINDEC(OUTPUT,30,2,INO)                               406,000
0473             CALL FILLB(OUTPUT,32,256)                                  406,500
0474             GO TO 53                                                   407,000
                C                                                           408,000
0475        1030 LEN=PCOL-1                                                 409,000
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0476                CALL WRITE(OUTPUT,LEN,16386,KNUM,FDUB)                    410,000
0477                BLINE=KNUM                                                411,000
0478                KNUM=KNUM+1                                               412,000
0479                FLINE=KNUM+1                                              413,000
0480                IF(INO-KNO)1025,1001,1001                                 414,000
                    C                                                         415,000
                    C   ACCIDENT LISTING?                                     416,000
                    C                                                         417,000
0481             1100 BLINE=KNUM-2                                            418,000
0482                ISW=0                                                     418,200
0483                CALL ESCAPE(ISW,&1299,&1320)                              418,400
0484                ISW=1                                                     418,600
0485                FLINE=0                                                   419,000
0486                CALL WRITE(OUTPUT,LEN,16386,KNUM-1,FDUB)                  420,000
0487                IF(TERSE)GO TO 1103                                       421,000
0488             1102 LEN=24                                                  422,000
0489                GO TO 1104                                                424,000
0490             1103 LEN=18                                                  425,000
0491             1104 CALL SPRINT(' ACCIDENT LISTING? (Y/N)',LEN,0)           426,000
0492             1101 CALL GET(I,&1102,&1102,&1102,&1110,&1102,&1102,&1102)   427,000
0493                IF(EQUC(STRING,YES))GO TO 1110                            428,000
0494                IF(EQUC(STRING,NO))GO TO 1299                             429,000
0495                GO TO 1102                                                429,250
                    C                                                         430,000
                    C   LIST ACCIDENT                                         431,000
                    C                                                         432,000
0496             1110 LLEN=13                                                 433,000
0497                IWID=1                                                    434,000
0498                IVC=1000                                                  435,000
0499                IST=1                                                     436,000
0500                IVST=ANUM                                                 437,000
0501                INO=0                                                     438,000
0502                INV=0                                                     439,000
0503                ACC=.TRUE.                                                440,000
0504                VEH=.FALSE.                                               441,000
0505                DR=.FALSE.                                                442,000
0506                OCC=.FALSE.                                               443,000
0507                KNUM=LINE                                                 443,250
0508                CALL READ(OUTPUT,LEN,16386,KNUM,FDUB)                     444,000
0509                KNUM=FLINE                                                445,000
0510             1111 CALL SPRINT(MESS2,LLEN,0)                               446,000
0511                CALL FILLB(STRING,1,80)                                   447,000
0512             1112 DO 1140 IVAR=IST,IVST                                   449,000
0513                I=2                                                       449,500
0514                CALL FILLB(STRING,1,60)                                   449,700
0515                IVC=IVC+1                                                 450,000
0516                LNUM=-IVC                                                 451,000
0517                CALL READ(IN,LEN,16386,LNUM,UFDUB)                        452,000
0518             1120 IF(ACC.AND.IVAR.GT.9)IWID=2                             454,000
0519                CALL IWRT(STRING,I,IWID,IVAR,1)                           455,000
0520                I=I+IWID                                                  456,000
0521                CALL MOVEC(ECHOL+1,IN(18),STRING(I))                      457,000
0522                I=I+ECHOL+2                                               458,000
0523                IF(NSW.OR.NCODES.LE.0)GO TO 1130                          458,020
0524                J=0                                                       458,040
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0525              IF(ONESW)JONE=OUTPUT(COL)                                    458,060
0526              IF(J.GT.240)JTWO=-1*(JTWO-240)                               458,080
0527              IF(TWOSW)CALL MOVEC(2,OUTPUT(COL),JTWO)                      458,100
0528              IF(JTWO)1128,1121,1122                                       458,120
0529         1121 CALL MOVEC(7,'UNKNOWN',STRING(I))                            458,140
0530              LEN=I+8                                                      458,160
0531              GO TO 1139                                                   458,180
0532         1122 K=1                                                          458,200
0533              DO 1125 LNUM=SLNUM,ELNUM                                     458,220
0534              CALL READ(CODES(K),LEN,16386,LNUM,UFDUB)                     458,240
0535         1125 K=K+LEN                                                      458,260
0536              K=(J-1)*LFW+1                                                458,280
0537              CALL MOVEC(LFW,CODES(K),STRING(I))                           458,300
0538              LEN=I+LFW+1                                                  458,320
0539              GO TO 1139                                                   458,340
0540         1128 J=-1*J                                                       458,360
0541              CALL MOVEC(20,NEWANS(1,J),STRING(I))                         458,380
0542              LEN=I+21                                                     458,400
0543              GO TO 1139                                                   458,420
0544         1130 CALL MOVEC(LFW,OUTPUT(COL),STRING(I))                        459,000
0545              LEN=I+LFW+1                                                  460,000
0546         1139 CALL SPRINT(STRING,LEN,0)                                    460,500
0547         1140 CONTINUE                                                     461,000
0548              IF(VEH.AND.DNUM.GT.0)GO TO 1156                              468,000
0549              IF(VEH)GO TO 1160                                            471,500
                C                                                              472,000
                C   SET UP LIST FOR VEHICLE                                   473,000
                C                                                              474,000
0550         1142 IF(FLINE)1299,1299,1143                                      475,000
0551         1143 CALL READ(OUTPUT,LEN,16386,KNUM,FDUB,&1299)                  475,250
0552              KNUM=FLINE                                                   475,500
0553              IF(DR.OR.OCC)GO TO 1161                                      476,000
0554              IF(VNUM)1299,1299,1149                                       477,000
0555         1149 ACC=.FALSE.                                                  478,000
0556              INV=0                                                        479,000
0557              IWID=5                                                       480,000
0558         1150 INV=INV+1                                                    481,000
0559              VEH=.TRUE.                                                   482,000
0560              OCC=.FALSE.                                                  483,000
0561              INO=0                                                        484,000
0562              IVC=2000                                                     485,000
0563              IST=INV*10000+1                                              486,000
0564              IVST=IST+VNUM-1                                              487,000
0565              CALL IWRT(MESS2,21,4,INV,2,'#')                              488,000
0566              LLEN=24                                                      489,000
0567              IF(INV-9)1111,1111,1151                                      490,000
0568         1151 IWID=6                                                       491,000
0569              GO TO 1111                                                   492,000
0570         1156 IVC=3000                                                     496,000
0571              IST=IVST+1                                                   497,000
0572              IVST=IST+DNUM-1                                              498,000
0573              VEH=.FALSE.                                                  499,000
0574              DR=.TRUE.                                                    500,000
0575              CALL READ(OUTPUT,LEN,16386,KNUM,FDUB,&1299)                  500,200
0576              KNUM=FLINE                                                   500,400
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0577                GO TO 1112                                                    501.000
                                                                                  502,000
                C                                                                 503,000
                C   SET UP OCCUPANT LISTING                                      504,000
                C                                                                 505,000
0578             1160 IF(FLINE)1299,1299,1161                                     506,000
0579             1161 IF(LCOMC(2,OUTPUT(30),'  '))1162,1162,1163                  507,000
0580             1162 IF(LCOMC(2,OUTPUT(28),'  '))1299,1299,1150                  508,000
0581             1163 DR=.FALSE.                                                  509,000
0582                  OCC=.TRUE.                                                  510,000
0583             1170 INO=INO+1                                                   511,000
0584                  CALL I*RT(MESS2,32,4,INO,2,'#')                             512,000
0585                  IVC=4000                                                    513,000
0586                  IST=(INV*10000)+(INO*100)+1                                 514,000
0587                  IVST=IST+PNUM-1                                             515,000
0588                  LLEN=35                                                     516,000
0589                  GO TO 1111                                                  530,000
                C                                                                 531,000
                C   ANY CORRECTIONS?                                             532,000
                C                                                                 532,500
0590             1299 IF(CORR)GO TO 1320                                          533,000
0591                  IF(TERSE)GO TO 1301                                         534,000
0592             1300 LEN=19                                                      536,000
0593                  GO TO 1302                                                  537,000
0594             1301 LEN=13                                                      538,000
0595             1302 CALL SPRINT(' CORRECTIONS? (Y/N)',LEN,0)                    539,000
0596             1310 CALL GET(I,&1320,&1100,&1300,&2000,&1300,&1300,&1300)       540,000
0597                  IF(EQUC(STRING,YES))GO TO 1320                              541,000
0598                  IF(EQUC(STRING,NO))GO TO 2000                               541,250
0599                  GO TO 1300                                                  541,290
                C*** REPLACE OUTPUT LINE                                          541,330
0600             1319 LEN=LSAVE                                                   541,370
0601                  CALL WRITE(OUTPUT,LEN,16386,KNUM,FDUB)                      541,600
0602             1320 ISW=2                                                       542,000
0603                  IF(TERSE)GO TO 1325                                         543,000
0604             1321 LEN=40                                                      544,000
0605                  CALL SPRINT(' ENTER VARIABLE NUMBER OR NAME (OR STOP)',LEN,0)  546,000
0606                  GO TO 1330                                                  547,000
0607             1325 LEN=10                                                      548,000
0608                  CALL SPRINT(' VARIABLE?',LEN,0)                             549,000
0609             1330 CALL NGET(IVAR,&1321,&1110,&1321,&1321,&1321,&1321,&1321,&2000)  550,000
0610                  CORR=.TRUE.                                                 552,000
0611                  OCC=.FALSE.                                                 553,000
0612                  VEH=.FALSE.                                                 554,000
0613                  DR=.FALSE.                                                  555,000
0614                  ACC=.FALSE.                                                 556,000
0615                  KNUM=LINE                                                   556,010
0616                  INV=0                                                       556,020
0617                  INO=0                                                       556,100
0618                  GRQUES=.TRUE.                                               556,250
0619                  CALL FILLB(STRING,200,203)                                  556,350
0620                  IF(IVAR)1340,1340,1329                                      557,000
0621             1329 INV=IVAR/10000                                              558,000
0622                  IF(INV)1340,1370,1331                                       560,000
0623             1331 IVC=IVAR-(INV*10000)                                        560,250
0624                  CALL BINDEC(STRING,200,2,INV)
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0625              IF(IVC-VNUM)1380,1380,1332                                    561,000
0626         1332 IF(IVC-(VNUM+DNUM))1385,1385,1333                             562,000
0627         1333 INO=IVC/100                                                   563,000
0628         1334 IVC=IVC-(INO*100)                                             565,000
0629              CALL BINDEC(STRING,202,2,INO)                                 565,250
0630              IF(IVC-PNUM)1390,1390,1400                                    566,000
                C                                                               567,000
                C   CHECK VARIABLE NAMES                                       568,000
                C                                                               569,000
0631         1340 IF(LCOMC(4,'STOP',STRING))1341,2000,1341                      570,000
0632         1341 DO 1345 IVAR=1,TNUM                                           571,000
0633              IF(LCOMC(0,STRING,VNAMES(IVAR)))1345,1350,1345                572,000
0634         1345 CONTINUE                                                      573,000
0635              GO TO 1400                                                    574,000
0636         1350 IF(IVAR-ANUM)1372,1372,1351                                   575,000
0637         1351 IF(IVAR-(ANUM+VNUM+DNUM))1355,1355,1352                       576,000
0638         1352 IF(IVAR-(TNUM-1))1353,1353,2000                               577,000
0639         1353 IVAR=IVAR-(ANUM+VNUM+DNUM)                                    578,000
0640              OCC=.TRUE.                                                    579,000
0641              GO TO 1356                                                    580,000
0642         1355 IVAR=IVAR-ANUM                                                581,000
0643              INO=0                                                         582,000
0644         1356 IF(TERSE)GO TO 1357                                           583,000
0645              CALL SPRINT(' ENTER VEHICLE NO:',LEN,0)                       584,000
0646              GO TO 1358                                                    585,000
0647         1357 LEN=9                                                         586,000
0648              CALL SPRINT(' VEH, NO:',LEN,0)                                587,000
0649         1358 CALL NGET(INV,&2000,&1356,&10,&1356,&1356,&1356,&1500,&1356)   588,000
0650              IF(INV)1401,1401,1359                                         589,000
0651         1359 IF(.NOT.OCC)GO TO 1365                                        591,000
0652              IF(TERSE)GO TO 1362                                           592,000
0653         1361 LEN=20                                                        593,000
0654              CALL SPRINT(' ENTER PASSENGER NO:',LEN,0)                     594,000
0655              GO TO 1363                                                    595,000
0656         1362 LEN=10                                                        596,000
0657              CALL SPRINT(' PASS, NO:',LEN,0)                               597,000
0658         1363 CALL NGET(INO,&2000,&1361,&10,&1361,&1361,&1361,&1500,&1361)   598,000
0659              IF(INO)1402,1402,1365                                         599,000
0660         1365 IVAR=IVAR+(INV*10000)+(INO*100)                               600,000
0661              GO TO 1329                                                    601,000
                C                                                               602,000
0662         1370 IF(IVAR)1400,1400,1371                                        603,000
0663         1371 IF(IVAR-ANUM)1372,1372,1400                                   604,000
0664         1372 ACC=.TRUE.                                                    605,000
0665              IVC=1000                                                      608,000
0666              IWID=1                                                        608,250
0667              IF(IVAR.GT.9)IWID=2                                           608,500
0668              GO TO 1391                                                    609,000
0669         1380 IVAR=IVC                                                      610,000
0670              IVC=2000                                                      611,000
0671              VEH=.TRUE.                                                    613,000
0672              GO TO 1389                                                    614,000
0673         1385 IVAR=IVC-VNUM                                                 615,000
0674              IVC=3000                                                      616,000
0675              DR=.TRUE.                                                     618,000
```

```
0676                GO TO 1389                                                  619,000
0677          1390  IVAR=IVC                                                    620,000
0678                IVC=4000                                                    620,250
0679                OCC=.TRUE.                                                  621,000
0680          1389  IWID=5                                                      622,000
0681                IF(INV.GT.9)IWID=6                                          623,000
0682          1391  IF(KNUM)1400,1400,1392                                      624,000
0683          1392  CALL READ(OUTPUT,LEN,16386,KNUM,FDUB,&1400)                 625,000
0684                KNUM=FLINE                                                  626,000
0685                IF(LCOMC(4,OUTPUT(28),STRING(200)))1391,1393,1400           627,000
0686          1393  IF(DR)CALL READ(OUTPUT,LEN,16386,KNUM,FDUB,&1400)           628,000
0687                IVS=IVAR                                                    629,000
0688                IVL=IVAR                                                    629,250
0689                LSAVE=LEN                                                   629,600
0690                GO TO 1450                                                  630,000
                C                                                             631,000
                C   CORRECTION ERROR COMMENTS                                  632,000
                C                                                             633,000
0691          1400  LEN=33                                                      634,000
0692                CALL SPRINT(' INVALID VARIABLE NUMBER OR NAME ',LEN,0)       635,000
0693                GO TO 1321                                                  636,000
0694          1401  LEN=43                                                      637,000
0695                CALL SPRINT(' INVALID VEHICLE NUMBER - ENTER REPLACEMENT',LEN,0)  638,000
0696                GO TO 1358                                                  639,000
0697          1402  LEN=44                                                      640,000
0698                CALL SPRINT(' INVALID OCCUPANT NUMBER - ENTER REPLACEMENT',LEN,0)  641,000
0699                GO TO 1363                                                  642,000
                C                                                             643,000
                C   ASK FOR CORRECTION                                         644,000
                C                                                             645,000
0700          1450  IF(TERSE)GO TO 1455                                         646,000
0701                LEN=17                                                      647,000
0702                CALL SPRINT(' ENTER NEW VALUE:',LEN,0)                      648,000
0703                GO TO 81                                                    649,000
0704          1455  LEN=7                                                       650,000
0705                CALL SPRINT(' VALUE:',LEN,0)                                651,000
0706                GO TO 81                                                    652,000
0707          1500  LEN=44                                                      653,000
0708                CALL SPRINT(' "&RESTART" NOT PERMITTED IN CORRECTION MODE',LEN,0)  654,000
0709                GO TO 1321                                                  655,000
                C                                                             656,000
                C   ACCIDENT ENDED - WRITE IT OUT                              657,000
                C                                                             658,000
0710          2000  IF(TERSE)GO TO 2001                                         659,000
0711                LEN=45                                                      660,000
0712                CALL SPRINT(' ENTER COMMENTS:  (TERMINATE WITH "SENDFILE")',LEN,0)  661,000
0713                GO TO 2002                                                  662,000
0714          2001  LEN=10                                                      663,000
0715                CALL SPRINT(' COMMENTS:',LEN,0)                             664,000
0716          2002  CALL CUINFO(3,QUESM)                                        665,000
0717                I=0                                                         665,500
0718          2003  STRING(1)=VDERR(1)                                          665,700
0719                CALL SCARDS(STRING(2),LEN,0,LNUM,&2010)                     665,900
0720                IF(I)2004,2005,2005                                         666,100
0721          2004  I=I+1                                                       666,300
```

```
0722              LEN=LEN+1                                                    666,400
0723              CALL WRITE(STRING,LEN,16386,I,FDUB)                          666,500
0724              GO TO 2003                                                   666,700
                C*** INITIALIZE COMMENTS                                       666,900
0725             2005 LNUM=-50000                                              667,100
0726              CALL READ(I,LLEN,16386,LNUM,FDUB,&2006)                      667,300
0727              GO TO 2007                                                   667,500
0728             2006 I=-50000                                                 667,700
0729             2007 CALL TIME(11,0,STRING(251))                              667,900
0730              STRING(250)=FF                                               668,100
0731              I=I+1                                                        668,300
0732              LLEN=17                                                      668,500
0733              CALL WRITE(STRING(250),LLEN,16386,I,FDUB)                    668,900
0734              GO TO 2004                                                   669,100
                C*** FINISH UP COMMENTS                                        669,300
0735             2010 CALL CUINFO(3,MESS(5))                                   669,500
0736              IF(I)2011,2012,2012                                          669,700
0737             2011 LNUM=-50000                                              669,900
0738              LEN=4                                                        670,100
0739              CALL WRITE(I,LEN,16386,LNUM,FDUB)                            670,300
                C                                                              670,700
                C   WRITE OUT CASES WITH ID                                   671,100
                C                                                              671,500
0740             2012 LNUM=0                                                   672,000
0741              CALL READ(I,LEN,16386,LNUM,UFDUB)                            673,000
0742              I=I+1                                                        674,000
0743              CALL WRITE(I,LEN,2,LNUM,UFDUB)                               675,000
0744              CALL READ(OUTPUT,LEN,16386,LINE,FDUB)                        676,000
0745              KNUM=LINE                                                    677,000
0746             2015 IF(KNUM)2020,2020,2016                                   678,000
0747             2016 CALL READ(OUTPUT,LEN,16386,KNUM,FDUB,&2020)              679,000
0748              CALL BINDEC(OUTPUT,1,6,I)                                    680,000
0749              CALL WRITE(OUTPUT,LEN,16386,KNUM,FDUB)                       681,000
0750              KNUM=FLINE                                                   682,000
0751              GO TO 2015                                                   683,000
0752             2020 CALL GETLST(FDUB,LINE)                                   693,000
0753              LINE=LINE+1                                                  693,250
0754              LNUM=-10000                                                  693,600
0755              CALL READ(STRING,LEN,16386,LNUM,FDUB)                        694,000
0756              CALL MOVEC(4,STRING,KNUM)                                    695,000
0757              KNUM=KNUM+1                                                  696,000
0758              CALL MOVEC(4,KNUM,STRING)                                    697,000
0759              CALL WRITE(STRING,LEN,16386,LNUM,FDUB)                       698,000
                C                                                              699,000
                C   REPORT ID NUMBER AND ASK IF WANT TO CONTINUE              700,000
                C                                                              701,000
0760              CALL FILLB(STRING,1,50)                                      702,000
0761              CALL MOVEC(36,'ACCIDENT CATALOGED - ASSIGNED ID NO:',STRING(2))  703,000
0762              CALL BINDEC(STRING,39,6,I)                                   704,000
0763              LEN=45                                                       705,000
0764              CALL SPRINT(STRING,LEN,0)                                    706,000
0765              IF(TERSE)GO TO 2060                                          707,000
0766             2050 LEN=37                                                   708,000
0767              CALL SPRINT(' ANOTHER ACCIDENT TO ENTER?  (Y OR N)',LEN,0)   709,000
0768              GO TO 2075                                                   710,000
```

```
MICHIGAN TERMINAL SYSTEM FORTRAN G(41336)          MAIN          07-08-75          12:43:59

0769          2060 LEN=18                                                              711.000
0770               CALL SPRINT(' ANOTHER ACCIDENT?',LEN,0)                             712.000
0771          2075 CALL GET(&2050,&2050,&2050,&2050,&2050,&3000)                       713.000
0772               IF(LCOMC(1,STRING,'N'))2080,3000,2080                               714.000
0773          2080 IF(LCOMC(1,'Y',STRING))2050,1,2050                                  715.000
0774          3000 CALL SYSTEM                                                         716.000
0775               END                                                                 717.000
```

COMMON BLOCK /GETCOM / MAP SIZE 10E

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
DATE	0	UFDUB	8	TERSE	C	ECHO	D	STRING	E
MESS	D5								

SUBPROGRAMS CALLED

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
ESCAPE	884	BEGIN	888	READ	88C	SPRINT	8C0	GET	8C4
EQUC	8C8	IWRT	8CC	BINDEC	8D0	FILLB	8D4	GRGET	8D8
GRCHK	8DC	MOVFC	8E0	LCOMC	8E4	WRITE	8E8	FILL0	8EC
NGET	8F0	FIXPI#	8F4	LIST	8F8	POSCON	8FC	SCANR	900
DECBIN	904	CUINF0	908	SCARD$	90C	TIME	910	GETLST	914
SYSTEM	918	IBCOM#	91C						

EQUIVALENCE DATA MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
IN	14C8	INS	14C8	SLNUM	14C8	ELNUM	14CC	NCODES	14D0
LFW	14D4	CFW	14D8	FW	14DC	COL	14E0	JDEF	151C
ECHOL	1530	DS#	1534	MDS#	1535	DAS#	1536	TMS#	1537
NS#	1538	MODS#	1539	MAKS#	153A	VDIS#	153B	VEMS#	153C
PASS#	153D	ONES#	153E	TWOS#	153F	GRIN	1540	IVS	1548
IVL	1544	OUTPUT	1584	BLINE	1590	FLINE	1594	J	1684
JON	1684	JT#0	1686	JONE	1687	VDIERR	1688	VDERR	1688
PAR	16A4	PARM	16A4	ANUM	16A4	VNUM	16A6	DNUM	16A8
PNUM	16AA	ACOL	16AC	VCOL	16AE	DCOL	16B0	PCOL	16B2
VD	16B8	VDFLD	16B8						

SCALAR MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
ZERO	16E0	QUES#	16E8	IS#	16EC	FDUB	16F0	LINE	16F4
ULINE	16F8	LNUM	16FC	I	1700	INUM	1704	NACC	1708
GRIVC	170C	IVC	1710	INE#	1714	INV	1718	INO	171C
IS"	1720	IWID	1724	IVAR	1728	NV	172C	KNO	1730
IMON	1734	IDAY	1738	IYR	173C	K	1740	KNUM	1744
IVST	1748	LSAVE	174C	MLEN	1750	LEN	1752	LLEN	1754
FF	1756	ZZ	1757	YES	1758	NO	1759	DASH	175A
GRQUES	175B	CORR	175C	ACC	175D	VEH	175E	DR	175F
OCC	1760	BQUFS	1761	BACKSW	1762				

ARRAY MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATIO
MON	1764	SMAK	1794	NMAK	17B0	EMAK	17CC	SMOD	17E8
EMOD	1810	NMOD	1838	CODES	1860	NEWANS	2800	VNAMES	2868
MESS1	2AC0	MESS2	2B00						

OPTIONS IN EFFECT ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,MAP
OPTIONS IN EFFECT NAME = MAIN , LINECNT = 57
STATISTICS SOURCE STATEMENTS = 775,PROGRAM SIZE = 27178
STATISTICS NO DIAGNOSTICS GENERATED

```
MICHIGAN TERMINAL SYSTEM FORTRAN G(41336)          BEGIN          07-08-75          12:43:48

0001                SUBROUTINE BEGIN(FDUB,OUTPUT,LINE,ULINE)                                  68,000
0002                EXTERNAL GETFD                                                            69,000
0003                LOGICAL*1 OUTPUT(256),TERSE,ECHO,STRING(256)                              70,000
0004                INTEGER*4 ADROF,ULINE,MESS1(4),FDUB,UFDUB,DATE(2)                         71,000
0005                INTEGER*2 LEN                                                             72,000
0006                REAL*8 FILE(2)                                                            73,000
0007                DATA FILE/'SEXDIUTI','LITY    '/                                          74,000
0008                DATA MESS1/'0STA','TUS ','OF ','    '/                                    75,000
0009                LOGICAL*1 ZZ,EQUC                                                         75,600
0010                DATA ZZ/200/                                                              76,200
0011                COMMON /GETCOM/ DATE,UFDUB,TERSE,ECHO,STRING                              78,000
0012                TERSE=.FALSE.                                                             79,000
0013                ECHO=.FALSE.                                                              80,000
0014                LEN=30                                                                    81,000
0015                CALL SPRINT('-HSRI - ACCIDENT ENTRY PROGRAM',LEN,0)                       82,000
0016                CALL TIME(6,1)                                                            83,000
0017                CALL TIME(10,0,DATE)                                                      84,000
0018                CALL MOVEC(8,DATE,STRING)                                                 85,000
0019                CALL MOVEC(2,STRING(7),OUTPUT(7))                                         86,000
0020                CALL MOVEC(2,STRING,OUTPUT(9))                                            87,000
0021                CALL MOVEC(2,STRING(4),OUTPUT(11))                                        88,000
0022                CALL GUINFO(2,FDUB)                                                       89,000
0023                CALL MOVEC(4,FDUB,OUTPUT(13))                                             90,000
0024                CALL RCALL(GETFD,2,0,ADROF(FILE),1,UFDUB)                                 91,000
                C                                                                             92,000
                C   CHECK ID                                                                 93,000
                C                                                                             94,000
0025                LNUM=-100000                                                              95,000
0026              10 LNUM=LNUM+1                                                              96,000
0027                CALL READ(STRING,LEN,2,LNUM,UFDUB,&45)                                    97,000
0028                IF(LCOMC(4,STRING,OUTPUT(13)))10,15,10                                    98,000
                C                                                                             99,000
                C   ID CHECKS OUT                                                           100,000
                C                                                                           101,000
0029              15 ULINE=LNUM                                                             102,000
0030                CALL MOVEC(4,FDUB,MESS1(4))                                             103,000
0031                CALL RCALL(GETFD,2,0,ADROF(STRING(13)),1,FDUB)                          104,000
0032                CALL GETLST(FDUB,LINE,&18)                                              105,000
0033                GO TO 20                                                                106,000
0034              18 LINE=1                                                                 107,000
                C                                                                         107,100
                C   PRINT STATS                                                           107,200
                C                                                                         107,300
0035              20 LNUM=-10000                                                          107,400
0036                CALL READ(STRING,LEN,16386,LNUM,FDUB,&25)                             107,500
0037                IF(LCOMC(8,DATE,STRING(13)))21,26,21                                  107,600
                C                                                                         107,700
                C   IF USER SIGNED ON TODAY DON'T PRINT STATS                             107,800
                C                                                                         107,900
0038              21 LEN=16                                                               108,000
0039                CALL SPRINT(MESS1,LEN,0)                                              108,100
0040                 CALL FILLB(STRING,101,150)                                           108,200
0041                CALL MOVEC(12,' NO. ENTERED',STRING(101))                             108,300
0042                LEN=13                                                                108,400
0043                CALL SPRINT(STRING(101),LEN,0)                                        108,500
```

```
0044              CALL MOVEC(11,' NOT BUILT ',STRING(101))                    108,600
0045              CALL MOVEC(9,'NO. BUILT',STRING(114))                       108,700
0046              CALL MOVEC(12,' NO. SIGNONS',STRING(125))                   108,800
0047              CALL MOVEC(11,'LAST SIGNON',STRING(139))                    108,900
0048              LEN=49                                                      109,000
0049              CALL SPRINT(STRING(101),LEN,0)                              109,100
0050              CALL FILLB(STRING,101,150)                                  109,200
0051              CALL MOVEC(4,STRING,I)                                      109,300
0052              CALL IWRT(STRING,102,9,I,1)                                 109,400
0053              CALL MOVEC(4,STRING(5),NE)                                  109,500
0054              CALL IWRT(STRING,114,8,NE,1)                                109,600
0055              CALL MOVEC(4,STRING(9),I)                                   109,700
0056              CALL IWRT(STRING,125,10,I,1)                                109,800
0057              CALL MOVEC(8,STRING(13),STRING(141))                        109,900
0058              CALL SPRINT(STRING(101),LEN,0)                              110,000
0059           23 CALL MOVEC(8,DATE,STRING(13))                               110,100
0060              I=I+1                                                       110,200
0061              CALL MOVEC(4,I,STRING(9))                                   110,300
0062              LEN=20                                                      110,400
0063              LNUM=-10000                                                 110,500
0064              CALL WRITE(STRING,LEN,16386,LNUM,FDUB)                      110,600
0065              GO TO 26                                                    110,700
                C                                                             110,800
                C   NEW USER                                                 110,900
                C                                                             111,000
0066           25 LEN=29                                                      111,100
0067              CALL SPRINT('-NEW USER - NO CASES ENTERED.',LEN,0)          111,200
0068              I=0                                                         111,300
0069              CALL FILLC(STRING,1,8,I)                                    111,400
0070              GO TO 23                                                    111,500
                C                                                             111,600
                C   CHECK SCRATCH PAD FOR COMMENTS                           111,700
                C                                                             111,800
0071           26 LNUM=-100000                                                111,900
0072              CALL READ(I,LEN,16386,LNUM,FDUB,&30)                        112,000
0073              LEN=22                                                      112,100
0074              CALL SPRINT('0SCRATCH PAD COMMENTS:',LEN,0)                 112,200
0075           27 CALL READ(STRING,LEN,1,LNUM,FDUB,&30)                       112,300
0076              IF(.NOT.EQUC(STRING,ZZ))GO TO 28                            112,400
0077              IF(LNUM.GT.I)GO TO 30                                       112,450
0078              CALL FILLB(STRING,250,270)                                  112,500
0079              CALL MOVEC(8,STRING(2),STRING(251))                         112,600
0080              CALL MOVEC(8,STRING(10),STRING(261))                        112,700
0081              LEN=20                                                      112,800
0082           28 CALL SPRINT(STRING,LEN,0)                                   112,900
0083              GO TO 27                                                    113,000
                C                                                             113,600
                C   ASK FOR INVESTIGATOR'S INITIALS                         114,200
                C                                                             114,800
0084           30 LEN=31                                                      116,000
0085              CALL SPRINT('0ENTER INVESTIGATOR''S INITIALS:',LEN,0)       117,000
0086              CALL GET(I,&30,&30,&30,&30,&30,&30,&30)                     118,000
0087              CALL MOVEC(3,STRING,OUTPUT(25))                             119,000
                C                                                             120,000
                C   TYPE OF QUESTIONS                                        121,000
```

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MICHIGAN TERMINAL SYSTEM FORTRAN G(41336)          BEGIN          07-08-75        12:43:48

                C                                                                      122,000
0088                LEN=41                                                             123,000
0089                CALL SPRINT('0FULL OR ABBREVIATED QUESTIONS:  (F OR A)',LEN,0)      124,000
0090                CALL GET(I,&31,&31,&31,&33,&31,&31,&31)                            125,000
0091             31 IF(LCOMC(1,STRING,'F'))22,35,22                                    126,000
0092             22 IF(LCOMC(1,STRING,'A'))20,33,20                                    127,000
0093             33 TERSE=.TRUE.                                                       128,000
0094                LEN=6                                                              129,000
0095                GO TO 36                                                           130,000
0096             35 LEN=19                                                             131,000
0097             36 CALL SPRINT(' ECHO:  (YES OR NO)',LEN,0)                           132,000
0098                CALL GET(I,&35,&35,&35,&40,&35,&35,&35)                            133,000
0099             37 IF(LCOMC(1,STRING,'N'))38,40,38                                    134,000
0100             38 IF(LCOMC(1,STRING,'Y'))35,39,35                                    135,000
0101             39 ECHO=.TRUE.                                                        136,000
0102                LEN=33                                                             137,000
0103                CALL SPRINT(' ECHO OPTION IS ENABLED',LEN,0)                       138,000
0104             40 RETURN                                                             139,000
                C                                                                      140,000
                C   BAD ID                                                            141,000
                C                                                                      142,000
0105             45 LEN=29                                                             143,000
0106                CALL SPRINT(' YOU ARE AN UNAUTHORIZED USER',LEN,0)                 144,000
0107                CALL SYSTEM                                                        145,000
0108                END                                                                146,000
```

COMMON BLOCK /GETCOM / MAP SIZE 10E

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
DATE	0	UFDUB	8	TERSE	C	ECHO	D	STRING	E

SUBPROGRAMS CALLED

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
GETFD	13C	SPRINT	140	TIME	144	MOVEC	148	GUINFO	14C
RCALL	150	ADRDF	154	READ	158	LCOMC	15C	GETLST	160
FILLB	164	IWRT	168	WRITE	16C	FILLC	170	EQUC	174
GET	178	SYSTEM	17C						

SCALAR MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
FDUB	498	LNUM	49C	ULINE	4A0	LINE	4A4	I	4A8
NE	4AC	LEN	4B0	ZZ	4B2				

ARRAY MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
OUTPUT	4B4	MESS1	4B8	FILE	4C8				

OPTIONS IN EFFECT ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,MAP
OPTIONS IN EFFECT NAME = BEGIN , LINECNT = 57
STATISTICS SOURCE STATEMENTS = 108,PROGRAM SIZE = 3830
STATISTICS NO DIAGNOSTICS GENERATED

```
MICHIGAN TERMINAL SYSTEM FORTRAN G(41336)          LIST          07-08-75      12:43:44

0001            SUBROUTINE LIST(NCODES,CODES,LFW)                              1,000
0002            INTEGER*2 LEN                                                  2,000
0003            LOGICAL*1 TERSE,ECHO,CODES(10),STRING(256)                     3,000
0004            INTEGER*4 DATE(2),UFDUB                                        4,000
0005            COMMON /GETCOM/ DATE,UFDUB,TERSE,ECHO,STRING                   5,000
0006            IF(TERSE)GO TO 5                                               6,000
0007            LEN=23                                                         7,000
0008            CALL SPRINT(' LIST OF VALID ANSWERS:',LEN,0)                   8,000
0009          5 I=1                                                            9,000
0010            LEN=LFW+1                                                     10,000
0011            CALL FILLB(STRING,1,LFW+1)                                    11,000
0012            DO 10 J=1,NCODES                                              12,000
0013            CALL MOVEC(LFW,CODES(I),STRING(2))                            13,000
0014            CALL SPRINT(STRING,LEN,0)                                     14,000
0015         10 I=I+LFW                                                       15,000
0016            RETURN                                                        16,000
0017            END                                                           17,000
```

COMMON BLOCK /GETCOM / MAP SIZE 10E

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
DATE	0	UFDUB	8	TERSE	C	ECHO	D	STRING	E

SUBPROGRAMS CALLED

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
SPRINT	A4	FILLB	A8	MOVFC	AC				

SCALAR MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
I	E0	LFW	E4	J	E8	NCODES	EC	LEN	F0

ARRAY MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
CODES	F4								

```
*OPTIONS IN EFFECT*   ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,MAP
*OPTIONS IN EFFECT*   NAME = LIST      , LINECNT =      57
*STATISTICS*     SOURCE STATEMENTS =       17,PROGRAM SIZE =      636
*STATISTICS*  NO DIAGNOSTICS GENERATED
```

READ A LINE -- [illegible]

MTS G=ASSEMBLER

```
VER=2L6       RELEASE=74FEB23       SYSTEM=MTS                    TIME=12:38:37       DAY=TUESDAY       DATE= 8 JUL 75

OVERRIDING PAR=BATCH

ASSEMBLER OPTIONS=ESD,MTS,NUM,ALGN,COL=3,DECK,LIST,LREF,STMT,TERM,XREF,BATCH,EXTEN,IBLK=1,OBLK=1,SIZE=8,
                  NORLD,URSYM,NOLOAD,NORENT,NOTEST,NOXTOR,UPLIST,EXTIME=0,UTRUFF=3,INSTSET=70,LINECNT=55,
                  NOUPDATE,NOEXECUTE,


SERCOM   = *MSINK*
SCARDS   = SGET*,,,
SPRINT   = *PRINT*
SPUNCH   = *DUMMY*
```

SYMBOL	TYPE	ID	ADDR	LENGTH	LD ID
GET	SD	01	000000	000018	
NGET	LD		00029F		01
GRGET	LD		0002C2		01
GRCHK	LD		0002F2		01
SCARDS	ER	02			
SPRINT	ER	03			
SYSTEM	ER	04			
CUINFO	ER	05			
GETCOM	CM	06	000000	00010E	

```
LOC  OBJECT CODE    ADDR1 ADDR2  STMT      LINE #    SOURCE STATEMENT
                                    1       1,000           MACRO
                                    2       2,000 &LAB1     NOUFS
                                    3       3,000 &LAB1     L       15,VCUINFO
                                    4       4,000           LA      1,ACUINFO
                                    5       5,000           BALR    14,15
                                    6       6,000           MEND
                                    7       7,000           MACRO
                                    8       8,000 &LAB2     AMP
                                    9       9,000 &LAB2     L       15,VCUINFO
                                   10      10,000           LA      1,ACUINFO
                                   11      11,000           BALR    14,15
                                   12      12,000           MEND
```

```
 LOC  OBJECT CODE    ADDR1 ADDR2  STMT    LINE #   SOURCE STATEMENT                                        8 JUL 75
                                    14     14,000 *********************************
                                    15     15,000 *
                                    16     16,000 *   CALL GET(I)
                                    17     17,000 *   CALL NGET(I)
                                    18     18,000 *
                                    19     19,000 *   RETURN CODES:
                                    20     20,000 *   &RC4 = &FULL SET
                                    21     21,000 *   &RC8 = &LIST SPECIFIED
                                    22     22,000 *   &RC12 = &CANCEL SPECIFIED
                                    23     23,000 *   &RC16 = DEFAULT INPUT
                                    24     24,000 *   &RC20 = "UNKNOWN" RETURNED
                                    25     25,000 *   &RC24 = &BACKUP SPECIFIED WITH I SET TO NUMBER OF BACKUPS
                                    26     26,000 *   &RC28 = &RESTART SPECIFIED
                                    27     27,000 *   &RC32 = END OF FILE ENCOUNTERED
                                    28     28,000 *
                                    29     29,000 *   FOR NGET, I IS SET TO A BINARY NUMBER IF A NUMERICAL INPUT IS
                                    30     30,000 *   GIVEN.  IF A NON-NUMERICAL INPUT IS GIVEN, I IS SET TO -1.
                                    31     31,000 *
                                    32     32,000 *********************************

 000000                             34     34,000 GET      CSECT
                                    35     35,000          ENTRY NGET,GRGET,GRCHK
 000000 90EC D00C          0000C    36     36,000          STM   14,12,12(13)       SAVE REGISTERS
 000004                             37     37,000          USING GET,12
 000004                             38     38,000          USING GETCOM,11
 000004 18CF                        39     39,000          LR    12,15              SET BASE REGISTERS
 000006 9200 C61C       0061C       40     40,000          MVI   NSW,X'00'
 00000A 5800 C368          00368    41     41,000 REG      L     11,AGETCOM
 00000E 4140 C68C          0068C    42     42,000          LA    4,SAVE             SET UP SAVEAREAS
 000012 5040 D008          00008    43     43,000          ST    4,8(0,13)
 000016 5000 4004          00004    44     44,000          ST    13,4(0,4)
 00001A 18D4                        45     45,000          LR    13,4
 00001C 1871                        46     46,000          LR    7,1
                                    47     47,000 *
                                    48     48,000 *   READ IN ANSWER
                                    49     49,000 *
 00001E 4120 F00E          0000E    50     50,000 AGAIN    LA    2,STRING           SET UP CALL TO SCARDS
 000022 5020 C36C          0036C    51     51,000          ST    2,SLIST
 000026 9240 2000          00000    52     52,000          MVI   0(2),C' '          FILL STRING WITH BLANKS
 00002A D262 2001 2000 00001 00000  53     53,000          MVC   1(99,2),0(2)
 000030 9102 C61C       0061C       54     53,100          TM    NSW,2
 000034 4710 C302          00302    55     53,200          BO    GRCSET
 000038 58F0 C388          00388    56     54,000          L     15,VCUINFO
 00003C 4110 C38C          0038C    57     55,000          LA    1,QCUINFO
 000040 05EF                        58     56,000          BALR  14,15              SET PREFIX CHAR, TO QUESTION MARK
 000042 4110 C36C          0036C    59     57,000          LA    1,SLIST
 000046 58F0 C37C          0037C    60     58,000          L     15,VSCARDS
 00004A 05EF                        61     59,000          BALR  14,15              READ IN ANSWER
 00004C 12FF                        62     60,000          LTR   15,15              CHECK FOR EOF
 00004E 4770 C0AA          000AA    63     61,000          BNZ   EOF
                                    64     62,000          NQUES
 000052 58F0 C388          00388    65+                    L     15,VCUINFO
 000056 4110 C394          00394    66+                    LA    1,RCUINFO
 00005A 05EF                        67+                    BALR  14,15
```

LOC OBJECT CODE ADDR1 ADDR2 STMT LINE # SOURCE STATEMENT 8 JUL 75

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00005C 9101 C61C       0061C              68      62,250           TM    NSW,1
000060 4710 C2D2              002D2       69      62,500           BO    GRSET
000064 1866                               70      63,000           SR    6,6                CHECK FOR DEFAULT OPTION
000066 4A60 C3D2              003D2       71      64,000           AH    6,LEN
00006A 47D0 C2BC              002BC       72      65,000           BNP   DEFAULT
00006E D500 B02E C38C 0038C 0038C       73      66,000 NSTART    CLC   STRING+0(1),QUES      CHECK FOR MISSING DATA
000074 4780 C0C4              000C4       74      67,000           BE    MD
000078 D502 B02E C6A2 006A2 006A2       75      68,000           CLC   STRING+0(3),UNK
00007E 4780 C0C4              000C4       76      69,000           BE    MD
000082 955C B00E       0000E              77      69,250           CLI   STRING,C'*'        CHECK FOR DEFAULT
000086 4780 C2BC              002BC       78      69,500           BE    DEFAULT
00008A 955F B00E       0000E              79      70,000           CLI   STRING,X'5F'        CHECK FOR CONTROL COMMAND
00008E 4780 C0D2              000D2       80      71,000           BE    CHECKM
000092 9104 C61C       0061C              81      72,000           TM    NSW,4
000096 4710 C2AE              002AE       82      73,000           BO    NSET
00009A 1FFF                               83      74,000 NRET      SR    15,15              ALL THROUGH
00009C 58D0 D004              00004       84      75,000 RETURN    L     13,4(0,13)         RESTORE REGISTERS
0000A0 58E0 D00C              0000C       85      76,000           L     14,12(0,13)
0000A4 98EC D014              00014       86      77,000           LM    0,12,20(13)
0000A8 07FE                               87      78,000           BR    14                 GO HOME
                                          88      79,000 *
                                          89      80,000 *   EOF
                                          90      81,000 *
                                          91      82,000 EOF       NOUES
0000AA 58F0 C388              00388       92+             EOF      L     15,VCUINFO
0000AE 4110 C394              00394       93+                      LA    1,ACUINFO
0000B2 05EF                               94+                      BALR  14,15
0000B4 41F0 0020              00020       95      83,000           LA    15,32              SET RETURN CODE
0000B8 47F0 C09C              0009C       96      84,000           B     RETURN
                                          97      85,000 *
                                          98      86,000 *   DEFAULT OPTION
                                          99      87,000 *
0000BC 41F0 0010              00010      100      88,000 DEFAULT   LA    15,16              SET RETURN CODE
0000C0 47F0 C09C              0009C      101      89,000           B     RETURN
                                         102      90,000 *
                                         103      91,000 *   MISSING DATA
                                         104      92,000 *
0000C4 D206 B00E C6A2 0006F 006A2      105      93,000 MD        MVC   STRING+0(7),UNK
0000CA 41F0 0014              00014      106      94,000           LA    15,20              SET RETURN CODE
0000CE 47F0 C09C              0009C      107      95,000           B     RETURN
                                         108      96,000 *
                                         109      97,000 *   CHECK FOR CONTROL COMMANDS
                                         110      98,000 *
0000D2 4150 C6A7              006A7      111      99,000 CHECKM    LA    5,MODS+2
0000D6 4160 0000              00000      112     100,000           LA    6,0                INDEX
0000DA 4180 0001              00001      113     101,000           LA    8,1                INCREMENT
0000DE 4190 0008              00008      114     102,000           LA    9,8                LIMIT
0000E2 4150 5002              00002      115     103,000 LOOPM    LA    5,2(0,5)
0000E6 D501 5000 B00E 00000 0000E      116     104,000           CLC   0(2,5),STRING      CHECK COMMAND
0000EC 4780 C116              00116      117     105,000           BE    PROC
0000F0 8768 C0E2              000E2      118     106,000           BXLE  6,8,LOOPM          GO AROUND
                                         119     107,000 BADMOD   AMP
0000F4 58F0 C388              00388      120+            BADMOD   L     15,VCUINFO
0000F8 4110 C39C              0039C      121+                     LA    1,ACUINFO
0000FC 05EF                              122+                     BALR  14,15
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  LOC  OBJECT CODE    ADDR1 ADDR2  STMT      LINE #   SOURCE STATEMENT
000FE 4110 C3D8            03D8   123      108,000          LA    1,BADL
00102 58F0 C380            0380   124      109,000          L     15,VSPRINT
00106 05EF                        125      110,000          BALR  14,15              PRINT BADMOD
                                  126      111,000          NQUES
00108 58F0 C388            0388   127+                      L     15,VCUINFO
0010C 4110 C394            0394   128+                      LA    1,BCUINFO
00110 05EF                        129+                      BALR  14,15
00112 47F0 C01E            001E   130      112,000          B     AGAIN
                                  131      113,000 *
                                  132      114,000 *   BRANCH TO PROPER ROUTINE
                                  133      115,000 *
00116 8B60 0002            0002   134      116,000 PROC     SLA   6,2
0011A 47F6 C11E            011E   135      117,000          B     **4(6)
0011E 47F0 C174            0174   136      118,000          B     FULL
00122 47F0 C14E            014E   137      119,000          B     ABBR
00126 47F0 C1B2            01B0   138      120,000          B     LIST
0012A 47F0 C226            0226   139      121,000          B     BACKUP
0012E 47F0 C1E8            01E8   140      122,000          B     RESTART
00132 47F0 C146            0146   141      123,000          B     SECHO
00136 47F0 C192            0192   142      124,000          B     CANCEL
0013A 47F0 C1E6            01E6   143      125,000          B     QUIT
                                  144      126,000 *
                                  145      127,000 *   NO ECHO
                                  146      128,000 *
0013E 9200 B00D            000D   147      129,000          MVI   ECHO,0
00142 47F0 C152            0152   148      130,000          B     OK
                                  149      131,000 *
                                  150      132,000 *   ECHO
                                  151      133,000 *
00146 9201 B00D            000D   152      134,000 SECHO    MVI   ECHO,1
0014A 47F0 C152            0152   153      135,000          B     OK
                                  154      136,000 *
                                  155      137,000 *   TERSE (ABBR)
                                  156      138,000 *
0014E 9201 B00C            000C   157      139,000 ABBR     MVI   TERSE,1
                                  158      140,000 *
                                  159      141,000 *   OK REQUEST
                                  160      142,000 *
                                  161      143,000 OK       AMP
00152 58F0 C388            0388   162+             OK       L     15,VCUINFO
00156 4110 C39C            039C   163+                      LA    1,ACUINFO
0015A 05EF                        164+                      BALR  14,15
0015C 4110 C3E4            03E4   165      144,000          LA    1,OKL
00160 58F0 C380            0380   166      145,000          L     15,VSPRINT
00164 05EF                        167      146,000          BALR  14,15              PRINT OK
                                  168      147,000          NQUES
00166 58F0 C388            0388   169+                      L     15,VCUINFO
0016A 4110 C394            0394   170+                      LA    1,BCUINFO
0016E 05EF                        171+                      BALR  14,15
00170 47F0 C01E            001E   172      148,000          B     AGAIN
                                  173      149,000 *
                                  174      150,000 *   FULL QUESTIONS
                                  175      151,000 *
00174 9200 B00C            000C   176      152,000 FULL     MVI   TERSE,0
00178 41F0 0004            0004   177      153,000          LA    15,4
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 LOC   OBJECT CODE     ADDR1 ADDR2  STMT      LINE #   SOURCE STATEMENT
000178 47F0 C09C             009C   178      154,000           B      RETURN
                                    179      155,000 *
                                    180      156,000 *   LIST OPTION
                                    181      157,000 *
000180 41F0 0008             0008   182      158,000 LIST      LA     15,8
000184 47F0 C09C             009C   183      159,000           B      RETURN
                                    184      160,000 *
                                    185      161,000 *   RESTART
                                    186      162,000 *
000188 41F0 001C             001C   187      163,000 RESTART   LA     15,28
00018C 47F0 C09C             009C   188      164,000           B      RETURN
                                    189      165,000 *
                                    190      166,000 *   CANCEL
                                    191      167,000 *
                                    192      168,000 CANCEL    AMP
000190 58F0 C388             0388   193+               CANCEL    L      15,VCUINFO
000194 4110 C39C             039C   194+                         LA     1,ACUINFO
000198 05EF                         195+                         BALR   14,15
00019A 58F0 C382             0382   196      169,000           L      15,VSPRINT      ASK FOR CONFIRMATION
00019E 4110 C3A4             03A4   197      170,000           LA     1,ACAN
0001A2 05EF                         198      171,000           BALR   14,15           BRANCH TO SPRINT
0001A4 4150 0001             0001   199      172,000           LA     5,1             SET A SWITCH
0001A8 58F0 C388             0388   200      173,000 OCHK      L      15,VCUINFO
0001AC 4110 C38C             038C   201      173,250           LA     1,QCUINFO
0001B0 05EF                         202      173,500           BALR   14,15           CHANGE PREFIX CHAR. TO "?"
0001B2 58F0 C37C             037C   203      174,000           L      15,VSCARDS      READ RESPONSE
0001B6 4110 C36C             036C   204      175,000           LA     1,SLIST
0001BA 05EF                         205      176,000           BALR   14,15
                                    206      177,000           NQUES
0001BC 58F0 C388             0388   207+               .         L      15,VCUINFO
0001C0 4110 C394             0394   208+                         LA     1,BCUINFO
0001C4 05EF                         209+                         BALR   14,15
0001C6 D501 B00E C6A0 000E   06A0   210      178,000           CLC    STRING+2(2),OKM+1  CHECK IF RESPONSE IS OK
0001CC 4780 C1D8             01D8   211      179,000           BE     CSKP
0001D0 41F0 0004             0004   212      180,000           LA     15,4            OTHERWISE REASK ORIGINAL QUESTION
0001D4 47F0 C09C             009C   213      181,000           B      RETURN
0001D8 1255                         214      182,000 CSKP      LTR    5,5             CHECK WHERE CAME FROM
0001DA 4780 C2E0             02E0   215      183,000           BNP    GQUIT
0001DE 41F0 000C             000C   216      184,000           LA     15,12           SET RETURN CODE FOR &CAN
0001E2 47F0 C09C             009C   217      185,000           B      RETURN
                                    218      186,000 *
                                    219      187,000 *   QUIT
                                    220      188,000 *
                                    221      189,000 QUIT      AMP
0001E6 58F0 C388             0388   222+               QUIT      L      15,VCUINFO
0001EA 4110 C39C             039C   223+                         LA     1,ACUINFO
0001EE 05EF                         224+                         BALR   14,15
0001F0 58F0 C380             0380   225      190,000           L      15,VSPRINT      CONFIRM &QUIT
0001F4 4110 C3B0             03B0   226      191,000           LA     1,AQUIT
0001F8 05EF                         227      192,000           BALR   14,15
0001FA 1B55                         228      193,000           SR     5,5             SET SWITCH
0001FC 47F0 C1A8             01A8   229      194,000           B      OCHK            CHECK FOR OK
000200 58F0 C384             0384   230      195,000 GQUIT     L      15,VSYSTEM      HE WANTS TO QUIT
000204 07FF                         231      196,000           BR     15
                                    232      197,000 *
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 LOC  OBJECT CODE     ADDR1 ADDR2  STMT      LINE #   SOURCE STATEMENT
                                    233     198,000 *   BACKUP
                                    234     199,000 *
000206 4150 B010             00010  235     200,000 BACKUP   LA    5,STRING+2
00020A 4160 0003             00003  236     201,000          LA    6,3
00020E 9540 5000       00000        237     202,000 BLOOP    CLI   0(5),C' '        CHECK FOR FIRST NON-BLANK CHARACTER
000212 4780 C22A             0022A  238     203,000          BE    CHECKN
000216 4150 5001             00001  239     204,000          LA    5,1(0,5)
00021A 4160 6001             00001  240     205,000          LA    6,1(0,6)
00021E 4960 C3D2             003D2  241     206,000          CH    6,LEN
000222 4720 C26E             0026E  242     207,000          BH    SETONE
000226 47F0 C22E             0022E  243     208,000          B     BLOOP
00022A 4150 5001             00001  244     209,000 CHECKN   LA    5,1(0,5)          FIND NUMBER
00022E 4160 6001             00001  245     210,000          LA    6,1(0,6)
000232 4960 C3D2             003D2  246     211,000          CH    6,LEN
000236 4720 C26E             0026E  247     212,000          BH    SETONE
00023A 9540 5000       00000        248     213,000          CLI   0(5),C' '        CHECK FOR NON-BLANK
00023E 4780 C22A             0022A  249     214,000          BE    CHECKN
000242 1B22                         250     215,000          SR    2,2               DECODE NUMBER
000244 DD10 5000 C704 00000 00704  251     216,000          TRT   0(17,5),TABLE
00024A 4920 C3C8             003C8  252     217,000          CH    2,BLA             CHECK FOR VALID NUMBER
00024E 4770 C292             00292  253     218,000          BNE   BADB
000252 1835                         254     219,000          LR    3,5
000254 1B13                         255     220,000          SR    1,3
000256 0610                         256     221,000          BCTR  1,0               SET IBM LENGTH
000258 4410 C608             00608  257     222,000          EX    1,PACK
00025C F97F C6D4 C000 00000 006D0  258     223,000          CP    PACKED,=PL16'32767'
000262 4720 C292             00292  259     224,000          BH    BADB
000266 4F30 C6D0             006D0  260     225,000          CVB   3,PACKED          CONVERT NUMBER TOO BINARY
00026A 47F0 C27A             0027A  261     226,000          B     BSKP
00026E 9550 B00E       0000E        262     227,000 SETONE   CLI   STRING,C'&&'      SEE IF FROM &BACKUP
000272 4770 C288             00288  263     228,000          BNE   NBAD
000276 4130 0001             00001  264     229,000          LA    3,1               OTHERWISE SET ONE BACKUP
00027A 5870 7000             00000  265     230,000 BSKP     L     7,0(0,7)          SET UP BACKUP NUMBER
00027E 5030 7000             00000  266     231,000          ST    3,0(0,7)
000282 9550 B00E       0000E        267     232,000          CLI   STRING,C'&&'
000286 4770 C09A             009A  268     233,000          BNE   NRET
00028A 41F0 0018             00018  269     234,000          LA    15,24             SET RETURN CODE
00028E 47F0 C09C             0009C  270     235,000          B     RETURN
000292 9550 B00E       0000E        271     236,000 BADB     CLI   STRING,C'&&'
000296 4770 C288             00288  272     237,000          BNE   NBAD
00029A 47F0 C0F4             000F4  273     238,000          B     BADMOD
                                    274     239,000 *
                                    275     240,000 *   NGET ENTRY
                                    276     241,000 *
00029E 90EC D00C             0000C  277     242,000 NGET     STM   14,12,12(13)    SAVE REGISTERS AND SET UP BASE REGISTE
00029E                              278     243,000          USING NGET,15
0002A2 58C0 F136             003D4  279     244,000          L     12,AGET
                                    280     245,000          DROP  15
000000                              281     246,000          USING GET,12
000000                              282     247,000          USING GETCOM,11
0002A6 9224 C61C       0061C        283     248,000          MVI   NSW,4
0002AA 47F0 C0AA             000A4  284     249,000          B     BEG
0002AE 4150 B00D             00000  285     250,000 NSET     LA    5,STRING+1
0002B2 1B66                         286     251,000          SR    6,6
0002B4 47F0 C22A             0022A  287     252,000          B     CHECKN
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 LOC  OBJECT CODE     ADDR1 ADDR2  STMT      LINE #   SOURCE STATEMENT                                    8 JUL 75

0002B8 4130 0001             0001   288      253,000 NBAD     LA    3,1
0002BC 1133                         289      254,000          LNR   3,3
0002BE 47F0 C27A             027A   290      255,000          B     BSKP
                                    291      256,000 *
                                    292      257,000 *   GROUP GET ENTRY - GRGET
                                    293      258,000 *
0002C2 90EC D00C             000C   294      259,000 GRGET    STM   14,12,12(13)        SAVE REGISTERS
0002C2                              295      260,000          USING GRGET,15
0002C6 58C0 F112             03D4   296      261,000          L     12,AGET
                                    297      262,000          DROP  15
000000                              298      263,000          USING GET,12
000000                              299      264,000          USING GETCOM,11
0002CA 9201 C61C       061C         300      265,000          MVI   NSW,X'01'
0002CE 47F0 C00A             000A   301      266,000          B     BEG
0002D2 4A50 C3D2             03D2   302      267,000 GRSET    LH    5,LEN               LOAD LENGTH OF STRING
0002D6 0650                         303      268,000          BCTR  5,0
0002D8 5860 7000             0000   304      269,000          L     6,0(0,7)            LOAD NUMBER OF GROUPS
0002DC 5860 6000             0000   305      269,250          L     6,0(0,6)
0002E0 D2FF C500 800E 0500   000E   306      272,000          MVC   GROUP+0(256),STRING   SAVE GROUP STRING
0002E6 1B33                         307      273,000          SR    3,3
0002E8 1B44                         308      274,000          SR    4,4
0002EA 9036 C3F8             03F8   309      275,000          STM   3,6,GRNUM           SAVE INFO
0002EE 47F0 C09A             009A   310      276,000          B     NRET
                                    311      277,000 *
                                    312      278,000 *   GRCHK ENTRY - CHECK INDIVIDUAL GROUPS
                                    313      279,000 *
0002F2 90EC D00C             000C   314      280,000 GRCHK    STM   14,12,12(13)        SAVE REGISTERS
0002F2                              315      281,000          USING GRCHK,15
0002F6 58C0 F2F2             03D4   316      282,000          L     12,AGET
                                    317      283,000          DROP  15
000000                              318      284,000          USING GET,12
000000                              319      285,000          USING GETCOM,11
0002FA 9202 C61C       061C         320      286,000          MVI   NSW,X'02'
0002FE 47F0 C02A             002A   321      287,000          B     BEG
000302 98BA C3F8             03F8   322      288,000 GRCSET   LM    8,10,GRNUM          FIND LOCATION
000306 4140 C500             0500   323      289,000          LA    4,GROUP
00030A 4150 800E             000E   324      290,000          LA    5,STRING
00030E 1A49                         325      291,000          AR    4,9                 CALC POSITION IN GROUP STRING
000310 4180 8001             0001   326      292,000          LA    8,1(0,8)
000314 5080 C3F8             03F8   327      293,000          ST    8,GRNUM
000318 1BA0                         328      294,000          SR    10,9                CALCULATE REMAINING LENGTH TO CHECK
00031A 470A C0BC             00BC   329      295,000          BM    DEFAULT
00031E 5980 C3FC             03FC   330      296,000          C     8,GRTOT             CHECK IF LAST ELEMENT
000322 4780 C334             0334   331      297,000          BNL   GRLST
000326 4440 C360             0360   332      298,000          EX    14,SEMIC            CHECK FOR SEMICOLON
00032A 4780 C334             0334   333      299,000          BZ    GRLST
00032E 18A1                         334      300,000          LR    10,1
000330 1BA4                         335      301,000          SR    10,4
000332 06A0                         336      302,000          BCTR  10,0
000334 44A0 C35A             035A   337      303,000 GRLST    EX    10,MOVGR            SET UP STRING
000338 1A9A                         338      304,000          AR    9,10                RESET POSTION (GRPOS)
00033A 4190 9002             0002   339      305,000          LA    9,2(0,9)
00033E 5090 C3F4             03F4   340      306,000          ST    9,GRPOS
000342 58A0 7004             0004   341      307,000          L     10,4(0,7)           CHECK NSW
000346 9200 C61C       061C         342      308,000          MVI   NSW,0
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 LOC  OBJECT CODE    ADDR1 ADDR2  STMT      LINE #   SOURCE STATEMENT
00034A 9101 A000       0000        343      309,000          TM    0(10),1          CHECK IF SET
00034E 4780 C26E             026E  344      310,000          BZ    NSTART
000352 9204 C61C       061C        345      311,000          MVI   NSW,4
000356 47F0 C26E             026E  346      312,000          B     NSTART
00035A D200 5000 4000 0000 0000    347      313,000 MOVSR    MVC   0(0,5),0(4)
000360 DD02 4002 C400 0000 0400    348      314,000 SEMIC    TRT   0(0,4),STBL
                                   349      400,000 *
                                   350      401,000 *   CONSTANTS AND DATA
                                   351      402,000 *
000366 0000
000368 00000000                    352      403,000 AGETCOM  DC    A(GETCOM)
00036C                             353      404,000 SLIST    DS    A
000370 000003D2                    354      405,000          DC    A(LEN)
000374 00000610                    355      406,000          DC    A(ZERO)
000378 00000614                    356      407,000          DC    A(LNUM)
00037C 00000000                    357      408,000 VSCARDS  DC    V(SCARDS)
000380 00000000                    358      409,000 VSPRINT  DC    V(SPRINT)
000384 00000000                    359      410,000 VSYSTEM  DC    V(SYSTEM)
000388 00000000                    360      411,000 VCUINFO  DC    V(CUINFO)
00038C 00000618                    361      412,000 QCUINFO  DC    A(THREE)
000390 000003BC                    362      413,000          DC    A(QUES)
000394 00000618                    363      414,000 BCUINFO  DC    A(THREE)
000398 000003C0                    364      415,000          DC    A(BLANK)
00039C 00000618                    365      416,000 ACUINFO  DC    A(THREE)
0003A0 000003C4                    366      417,000          DC    A(AMP)
0003A4 00000635                    367      418,000 ACAN     DC    A(CMESS)
0003A8 000003CE                    368      419,000          DC    A(LEN3)
0003AC 00000610                    369      420,000          DC    A(ZERO)
0003B0 00000669                    370      421,000 AQUIT    DC    A(CMESS)
0003B4 000003D0                    371      422,000          DC    A(LEN4)
0003B8 00000610                    372      423,000          DC    A(ZERO)
0003BC 6B404040                    373      424,000 QUES     DC    CL4'?'
0003C0 40404040                    374      425,000 BLANK    DC    CL4' '
0003C4 5B405B40                    375      426,000 AMP      DC    CL4'&&'
0003C8 0040                        376      427,000 BLA      DC    H'64'
0003CA 0018                        377      428,000 LEN1     DC    H'24'
0003CC 0003                        378      429,000 LEN2     DC    H'3'
0003CE 0034                        379      430,000 LEN3     DC    H'52'
0003D0 0036                        380      431,000 LEN4     DC    H'54'
0003D2                             381      432,000 LEN      DS    H
0003D4 00000000                    382      433,000 AGET     DC    A(GET)
0003D8 00000619                    383      434,000 BADL     DC    A(BADM)
0003DC 000003CA                    384      435,000          DC    A(LEN1)
0003E0 00000610                    385      436,000          DC    A(ZERO)
0003E4 0000069F                    386      437,000 OKL      DC    A(OKM)
0003E8 000003CC                    387      438,000          DC    A(LEN2)
0003EC 00000610                    388      439,000          DC    A(ZERO)
0003F0                             389      439,250 GRNUM    DS    F
0003F4                             390      439,500 GRPOS    DS    F
0003F8                             391      439,750 GRLEN    DS    F
0003FC                             392      440,000 GRTOT    DS    F
000400 0000000000000000            393      440,500 STBL     DC    94X'00',X'FF',161X'00'
000500                             394      441,000 CBUF     DS    256X
000600                             395      442,000 PACKED   DS    D
000608 F270 C600 5000 0000 0000    396      441,000 PACK     PACK  PACKED,0(0,5)
```

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	LINE #	SOURCE STATEMENT		
								8 JUL 75
00060E	0000							
000610	00000000			397	442,000	ZERO	DC	F'0'
000614				398	443,000	LNUM	DS	F
000618	00000003			399	444,000	THREE	DC	F'3'
00061C				400	445,000	NSW	DS	X
00061D	40C9D5E5C1D3C9C4			401	446,000	BADM	DC	C' INVALID CONTROL COMMAND'
000635	40C9E240C1C3C3C9			402	447,000	CMESS	DC	C' IS ACCIDENT TO BE CANCELLED, PLEASE CONFIRM, (OK
000669	40C4D6404BE8D6E340			403	448,000	QMESS	DC	C' DO YOU WISH TO SIGNOFF (QUIT)?'
000688	404020C3C5C1E2C5			404	449,000		DC	C' PLEASE CONFIRM, (OK)'
00069F	40D6D2			405	450,000	OKM	DC	C' OK'
0006A2	E4D5D2D5D6E6D5			406	451,000	UNK	DC	C'UNKNOWN'
0006A9	5BC65BC15BD35BC2			407	452,000	MODS	DC	C'&&F&&A&&L&&B&&R&&E&&CR&G&&N'
0006BC				408	453,000	SAVE	DS	18F
000704	FFFFFFFFFFFFFFFF			409	454,000	TABLE	DC	60X'FF'
000744	40			410	455,000		DC	X'40'
000745	FFFFFFFFFFFFFFFF			411	456,000		DC	175X'FF'
0007F4	00000000000000000			412	457,000		DC	12X'00'
0007FE	FFFFFFFFFFFF			413	458,000		DC	6X'FF'
000800				414	459,000	GETCOM	COM	
000800				415	460,000	DATE	DS	2F
000808				416	461,000	UFDUB	DS	F
00080C				417	462,000	TERSE	DS	X
00080D				418	463,000	ECHO	DS	X
00080E				419	464,000	STRING	DS	256X
				420	465,000		END	
000908	00000000000000020			421				=PL16'32767'

LOC	LEN	DEFN	LITERAL	REFERENCES
000808	16	421	=PL16'32767'	258

SYMBOL	LENGTH,VALUE,DEFN	REFERENCES
ABBR	4,14E,157	137
ACAN	4,3A4,367	197
ACUINFO	4,39C,365	121 163 194 223
AGAIN	4,1E,59	138 172
AGET	4,3D4,382	279 296 316
AGETCOM	4,368,352	41
AMP	4,3C4,375	366
AQUIT	4,3A8,370	226
BACKUP	4,236,235	139
BADB	4,292,271	253 259
BADL	4,3D8,383	123
BADM	24,610,421	383
BADMOD	4,F4,120	273
BCUINFO	4,394,363	66 93 128 170 208
BEG	4,4,41	284 321 321
BLA	2,3C8,376	252
BLANK	4,3C0,374	364
BLOOP	4,23E,237	243
BSKP	4,27A,265	261 298
CANCEL	4,198,193	142
CHECKM	4,D2,111	88
CHECKN	4,22A,244	238 249 287
CMESS	52,635,422	367
CSKP	2,1D8,214	211
DATE	4,0,415	
DEFAULT	4,BC,180	72 78 329
ECHO	1,0,418	147 152
EOF	4,AA,92	63
FULL	4,174,176	136
GET	1,0,34	37 281 298 318 382
GETCOM	1,0,414	38 282 299 319 352
GQUIT	4,238,238	215
GRCHK	4,2F2,314	35 315
GRCSET	4,302,322	55
GRGET	4,2C2,294	35 295
GRLEN	4,3F8,391	
GRLST	4,334,337	331 333
GRNUM	4,3F0,389	339 322 327
GROUP	1,500,394	326 323
GRPOS	4,3F4,393	343
GRSET	4,2D2,302	69
GRTOT	4,3FC,392	338
LEN	2,3D2,381	71 241 246 302 354
LEN1	2,3CA,377	384
LEN2	2,3CC,378	387
LEN3	2,3CE,379	368
LEN4	2,3D0,380	371
LIST	4,188,182	138
LNUM	4,614,398	356
LOOPM	4,E2,115	118
MD	6,C4,125	74 76
MODS	18,6A9,407	111
MOVGR	6,35A,347	337
NBAD	4,258,258	265 272
NGET	4,29E,277	35 278

SYMBOL	LENGTH,VALUE,DEFN	REFERENCES
NRET	2,9A,83	268 310
NSET	4,2AE,285	82
NSTART	6,6E,73	344 346
NSW	1,61C,420	48 54 68 81 283 300 320 342 345
OCHK	4,1A8,208	229
OK	4,152,162	148 153
OKL	4,3E4,386	165
OKM	3,69F,425	210 386
PACK	6,628,396	257
PACKED	8,688,395	258 260 396
PROC	4,116,134	117
QCUINFO	4,38C,361	57 221
QMESS	31,669,403	370
QUES	4,39C,373	73 362
QUIT	4,1E6,222	143
RESTART	4,188,187	140
RETURN	4,9C,84	96 121 167 178 183 188 213 217 270
SAVE	4,68C,408	42
SECHO	4,146,152	141
SEMIC	6,360,348	332
SETONE	4,26E,262	242 247
SLIST	4,36C,353	51 59 234
STBL	1,480,393	348
STRING	1,E,419	52 73 75 77 79 105 116 210 235 262 267 271 285 306 324
TABLE	1,784,429	251
TERSE	1,C,417	157 176
THREE	4,618,399	361 363 365
UFDUR	4,8,416	
UNK.	7,6A2,406	75 105
VCUINFO	4,388,360	56 65 92 120 127 162 169 193 200 207 222
VSCARDS	4,37C,357	60 223
VSPRINT	4,380,358	124 166 196 225
VSYSTEM	4,384,359	230
ZERO	4,610,397	355 369 372 385 388

NO STATEMENTS FLAGGED IN THIS ASSEMBLY

393 SCARDS SOURCE RECORDS
4 SERCOM OUTPUT RECORDS, 527 SPRINT OUTPUT RECORDS, 42 SPUNCH OUTPUT RECORDS

The following pages exhibit the UTILITY FILE BUILD program which is described in the text of this appendix. This is the program which the system manager would use to set up the question and answer codes for a new study (as in the QRS mode of operation), and typical setup times for 50 or 60 questions would be an hour or two. In addition this program is used for editing existing utility files for spelling errors or for inserting new allowable codes.

Build Utility File Routine.

```
MICHIGAN TERMINAL SYSTEM FORTRAN G(41336)          MAIN          07-08-75        12:44:28

0001                INTEGER*4 CODL,GLNUM,ILNUM,GNUM,ECHOL,COL,LFW,CFW,FW,SECTN                1,000
0002                INTEGER*2 GLEN,SW(8),LEN,COMD(10),COM,ACOL,VCOL,DCOL,PCOL                 2,000
0003                INTEGER*2 LEN,ANUM,VNUM,DNUM,PNUM,PARM(10)                                3,000
0004                LOGICAL*1 SETPFX,I1,QUES,STRING(525),SLASH,SECT(4),STYPE(4)               4,000
0005                LOGICAL*1 EQUC,ACC,VEH,DR,OCC,CODES(900)                                  5,000
0006                REAL*8 VNAME(75)                                                          6,000
0007                EQUIVALENCE (SECTN,SECT(1),ACC),(SECT(2),VEH),(SECT(3),DR),(SECT(4        7,000
                   1),OCC)                                                                    7,000
0008                EQUIVALENCE (STRING,COM)                                                  8,000
0009                DATA QUES/'?'/, SLASH/'/'/, STYPE/'A','V','D','O'/                        9,000
0010                INTEGER*4 SLNUM,ELNUM,IN(30)                                             10,000
0011                LOGICAL*1 DSW,MDSW,DASW,TMSW,NSW,INS(120),ONESW,TWOSW                    11,000
0012                LOGICAL*1 MODSW,MAKSW,VDISW,VEHSW,PASSW                                  12,000
0013                INTEGER*2 ILEN/120/                                                      13,000
0014                EQUIVALENCE (IN(1),INS(1),SLNUM),(IN(2),ELNUM),                          14,000
                   1            (IN(3),NCODES),(IN(4),LFW),(IN(5),CFW),                   15,000
                   2            (IN(6),FW),(IN(7),COL),(IN(27),ECHOL),                    16,000
                   3            (INS(109),DSW),(INS(110),MDSW),(INS(111),DASW),           17,000
                   4            (INS(112),TMSW),(INS(113),NSW),(INS(114),MODSW),          18,000
                   5            (INS(115),MAKSW),(INS(116),VDISW),                        19,000
                   6            (INS(117),VEHSW),(INS(118),PASSW),                        19,250
                   7            (INS(119),ONESW),(INS(120),TWOSW)                         19,400
0015                LOGICAL*1 ION(4),IONE                                                    19,500
0016                INTEGER*2 ITWO,IDEF                                                      19,600
0017                EQUIVALENCE (I,ION),(ION(3),ITWO),(ION(4),IONE),(IN(22),IDEF)            19,700
0018                INTEGER*4 CODSP(10),IVS,IVL,IVAR,GRIN(17)                                20,000
0019                INTEGER*2 GLEN/68/                                                       21,000
0020                EQUIVALENCE (GRIN(1),IVS),(GRIN(2),IVL)                                  22,000
0021                EQUIVALENCE (PARM(1),ANUM),(PARM(2),VNUM),(PARM(3),DNUM),                23,000
                   1            (PARM(4),PNUM),(PARM(5),ACOL),(PARM(6),VCOL),             24,000
                   2            (PARM(7),DCOL),(PARM(8),PCOL),(PARM(9),CODL)              25,000
0022                INTEGER*4 GRL(4),IDVL(4),SLEN                                            26,000
0023                DATA GRL/11000,12000,13000,14000/, IDVL/1000,2000,3000,4000/             27,000
0024                DATA COMD/'IN','ST','CH','LI','AD'/                                      28,000
0025                INTEGER*4 LMOD(8),CMOD(6),CKEY(10),KEYVAL(2,10)                          29,000
0026                LOGICAL*1 MSW(10),NSW(10)                                                30,000
0027                DATA CMOD/'L   ',',    ',',T   ',',    ',',SW  ',',    '/                31,000
0028                DATA CKEY/'S   ',',    ',',G   ',',    ',',I   ',',    ',               32,000
                   1          'C   ',',    ',',D   ',',    '/                               33,000
0029                DATA LMOD/'N   ',',    ',',G   ',',    ',',I   ',',    ',               34,000
                   1          'A   ',',    '/                                               35,000
                    C                                                                       35,200
                    C   INITIALIZE PROGRAM                                                  35,400
                    C                                                                       35,600
0030                  LNUM=-20000                                                           35,800
0031                  CALL READ(PARM,LEN,16386,LNUM,2,&10)                                  36,000
0032                  I=ANUM+VNUM+DNUM+PNUM                                                 36,100
0033                  LNUM=-19999                                                           36,200
0034                  J=1                                                                   36,400
0035                2 CALL READ(VNAME(J),LEN,16386,LNUM,2)                                  36,600
0036                  I=I-8                                                                 36,800
0037                  IF(I-8)10,10,3                                                        37,000
0038                3 J=J+8                                                                 37,200
0039                  LNUM=LNUM+1                                                           37,400
0040                  GO TO 2                                                               37,600
```

```
                C
                C   ASK FOR COMMAND
                C
0041              10 LEN=8
0042                 CALL SPRINT('0COMMAND',LEN,0)
0043                 I1=SETPFX(QUES,1)
0044                 CALL FILLB(STRING,1,256)
0045                 CALL SCARDS(STRING,LEN,0,LNUM,&1000)
0046                 I1=SETPFX(I1,1)
0047                 DO 15 I=1,5
0048                 IF(COM-COMD(I))15,20,15
0049              15 CONTINUE
0050                 LEN=17
0051                 CALL SPRINT(' INVALID COMMAND ',LEN,0)
0052                 GO TO 10
                C
                C   BRANCH TO CORRECT COMMAND
                C
0053              20 CALL SCANR(' ',STRING,1,256,J)
0054                 CALL FILLB(STRING,1,J)
0055                 GO TO (100,1000,200,300,400),I
                C
                C   INITIALIZE SECTION
                C
0056             100 ANUM=0
0057                 VNUM=0
0058                 DNUM=0
0059                 PNUM=0
0060                 ACOL=32
0061                 VCOL=32
0062                 DCOL=32
0063                 PCOL=32
0064                 CODL=1
0065                 SECTN=0
0066                 ACC=.TRUE.
0067                 WRITE(6,9001)
0068              9001 FORMAT(' ENTER NO. OF VARIABLES IN ACC. SECT:')
0069                 READ(5,9002)ANUM
0070              9002 FORMAT(I5)
0071                 IF(ANUM.LE.0)GO TO 10
0072                 GLNUM=GRL(1)
0073                 ILNUM=IDVL(1)
0074                 ICOL=ACOL
0075                 ASSIGN 110 TO IBR
0076              101 NGR=0
0077                 IVAR=1
0078                 GO TO 150
                C
0079              110 IF(IVAR-ANUM)150,150,111
                C
                C   PROCESS VEHICLE SECTION
                C
0080              111 ACOL=ICOL
0081                 WRITE(6,9003)
0082              9003 FORMAT(' ENTER NO. OF VARIABLES IN VEH. SECT:')
```

```
0083                READ(5,9002,END=10) VNUM                                  91,000
0084                IF(VNUM.LE.0)GO TO 10                                     92,000
0085                SECTN=0                                                   92,250
0086                VEH=.TRUE.                                                92,500
0087                GLNUM=GRL(2)                                              93,000
0088                ILNUM=IDVL(2)                                             94,000
0089                ICOL=VCOL                                                 95,000
0090                ASSIGN 120 TO IBR                                         96,000
0091                GO TO 101                                                 97,000
                C                                                             98,000
0092              120 IF(IVAR-VNUM)150,150,121                                99,000
                C                                                            100,000
                C   PROCESS DRIVER SECTION                                  101,000
                C                                                            102,000
0093              121 VCOL=ICOL                                              102,250
0094                  WRITE(6,9004)                                          103,000
0095             9004 FORMAT(' ENTER NO. OF VARIABLES IN DR. SECT:')         104,000
0096                  READ(5,9002,END=10)DNUM                                105,000
0097                  GLNUM=GRL(3)                                           107,000
0098                  ILNUM=IDVL(3)                                          108,000
0099                  ICOL=DCOL                                              109,000
0100                  SECTN=0                                                109,250
0101                  DR=.TRUE.                                              109,500
0102                  IF(DNUM.LE.0)GO TO 131                                 109,600
0103                  ASSIGN 130 TO IBR                                      110,000
0104                  GO TO 101                                              111,000
                C                                                            112,000
0105              130 IF(IVAR-DNUM)150,150,131                               113,000
                C                                                            114,000
                C   PROCESS PASSENGER SECTION                               115,000
                C                                                            116,000
0106              131 PCOL=ICOL                                              116,250
0107                  WRITE(6,9005)                                          117,000
0108             9005 FORMAT(' ENTER NO. OV VARIABLES IN PASS. SECT:')       118,000
0109                  READ(5,9002,END=10)PNUM                                119,000
0110                  IF(PNUM.LE.0)GO TO 10                                  120,000
0111                  GLNUM=GRL(4)                                           121,000
0112                  ILNUM=IDVL(4)                                          122,000
0113                  ICOL=PCOL                                              123,000
0114                  SECTN=0                                                123,250
0115                  OCC=.TRUE.                                             123,500
0116                  ASSIGN 140 TO IBR                                      124,000
0117                  GO TO 101                                              125,000
                C                                                            126,000
0118              140 IF(IVAR-PNUM)150,150,141                               127,000
0119              141 PCOL=ICOL                                              127,250
0120                  GO TO 10                                               127,500
                C                                                            128,000
                C   ASK FOR GROUP QUESTION                                  129,000
                C                                                            130,000
0121              150 NGR=NGR+1                                              131,000
0122              151 WRITE(6,1150)NGR                                       132,000
0123             1150 FORMAT(' NO. OF QUESTIONS IN GRP.',I3,'?')             133,000
0124                  READ(5,9002)GNUM                                       134,000
0125                  IF(GNUM.LE.0)GO TO 151                                 135,000
```

```
0126                IVS=IVAR                                                  136,000
0127                IVL=IVAR+GNUM-1                                           137,000
0128                WRITE(6,9010)                                             138,000
0129          9010  FORMAT(' ENTER GROUP QUESTION:')                          139,000
0130                READ(5,9011) (GRIN(I),I=3,17)                             140,000
0131          9011  FORMAT(15A4)                                              141,000
0132                CALL WRITE(GRIN,GLEN,16386,-GLNUM,2)                      142,000
0133                GLNUM=GLNUM+1                                             143,000
                C                                                             144,000
                C   PROCESS EACH INDIVIDUAL QUESTION                         145,000
                C                                                             146,000
0134                DO 180 IVAR=IVS,IVL                                       147,000
0135          9012  WRITE(6,9020)IVAR                                         148,000
0136          9020  FORMAT(' QUESTION',I3/' ENTER DSW,MDSW,DASW,TMSW,NSW,MODSW,MAKSW,V  149,000
                   1DISW,VEHSW,PASSW')                                        149,000
0137                READ(5,9021,ERR=9012) (SW(I),I=1,10)                      150,000
0138          9021  FORMAT(10I5)                                              151,000
0139                I=0                                                       152,000
0140                CALL FILLB(IN,1,108)                                      153,000
0141                CALL FILLC(IN,109,120,I)                                  154,000
                C                                                             155,000
                C   SET PROPER SWITCHES IN IN TO TRUE                        156,000
                C                                                             157,000
0142                DO 152 I=1,10                                             158,000
0143                IF(SW(I))152,152,153                                      159,000
0144            153 INS(108+I)=.TRUE.                                         160,000
0145            152 CONTINUE                                                  161,000
                C*** ASK FOR ONESW OR TWOSW                                   161,100
0146                IF(NSW)GO TO 154                                          161,200
0147            157 WRITE(6,9040)                                             161,300
0148          9040  FORMAT(' ENTER 1 OR 2 FOR OUTPUT COLUMN WIDTH')          161,400
0149                READ(5,9021,ERR=157)I                                     161,500
0150                IF(I.LT.1.OR.I.GT.2)GO TO 157                             161,600
0151                ONESW=.FALSE.                                             161,650
0152                TWOSW=.FALSE.                                             161,700
0153                IF(I.EQ.1)ONESW=.TRUE.                                    161,750
0154                IF(I.EQ.2)TWOSW=.TRUE.                                    161,800
0155            154 WRITE(6,9022)                                             162,000
0156          9022  FORMAT(' ENTER NCODES,LFW,CFW,FW')                        163,000
0157                READ(5,9023,ERR=9012) NCODES,LFW,CFW,FW                   164,000
0158          9023  FORMAT(4I5)                                               165,000
0159            155 WRITE(6,9024)                                             166,000
0160          9024  FORMAT(' ENTER FULL QUESTION:')                           167,000
0161                INS(29)=SLASH                                             168,000
0162                READ(5,9025) (INS(I),I=30,68)                             169,000
0163          9025  FORMAT(39A1)                                              170,000
0164                WRITE(6,9026)                                             171,000
0165          9026  FORMAT(' ENTER ABBR. QUEST:')                             172,000
0166                INS(69)=SLASH                                             173,000
0167                READ(5,9027) (INS(I),I=70,84)                             174,000
0168          9027  FORMAT(15A1)                                              175,000
                C                                                             176,000
                C   DETERMINE ECHOL VNAME                                    177,000
                C                                                             178,000
0169                CALL SCANR('=',INS,70,84,I,&156)                          179,000
```

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0170              ECHOL=I-70                                              180,000
0171              IF(ECHOL)156,156,159                                    181,000
0172          156 WRITE(6,9028)                                           182,000
0173         9028 FORMAT(' NO COLON, :, IN QUESTION ')                    183,000
0174              GO TO 155                                               184,000
0175          159 I=0                                                     185,000
0176              IF(ACC)GO TO 160                                        186,000
0177              I=ANUM                                                  187,000
0178              IF(VEH)GO TO 160                                        188,000
0179              I=I+VNUM                                                189,000
0180              IF(DR)GO TO 160                                         190,000
0181              I=I+DNUM                                                191,000
0182          160 I=I+IVAR                                                192,000
0183              CALL FILLB(VNAME(I),1,8)                                193,000
0184              CALL MOVEC(ECHOL,INS(70),VNAME(I))                      194,000
                C                                                         195,000
                C   DETERMINE COLUMN                                     196,000
                C                                                         197,000
0185              ECHOL=ECHOL+1                                           197,250
0186              COL=ICOL                                                198,000
0187              IF(NSW.OR.NCODES.LE.0)GO TO 161                         199,000
0188              IF(ONESW)ICOL=ICOL+1                                    200,000
0189              IF(TWOSW)ICOL=ICOL+2                                    200,250
0190              GO TO 162                                               201,000
0191          161 ICOL=ICOL+FW                                            202,000
                C                                                         203,000
                C   CHECK TO READ CODES                                   204,000
                C                                                         205,000
0192          162 IF(NCODES)170,170,163                                   206,000
0193          163 SLNUM=CODL                                              207,000
0194              ELNUM=CODL                                              208,000
0195              WRITE(6,9030)NCODES                                     209,000
0196         9030 FORMAT(' ENTER',I3,' CODES:')                           210,000
0197              J1=1                                                    211,000
0198              J=1                                                     212,000
0199              DO 169 I=1,NCODES                                       213,000
0200              READ(5,9031,END=9012)CODSP                              214,000
0201         9031 FORMAT(10A4)                                            215,000
0202              CALL MOVEC(LFW,CODSP,CODES(J1))                         216,000
0203          169 J1=J1+LFW                                               217,000
0204              J1=J1-1                                                 217,250
0205          164 IF(J1-255)168,168,165                                   218,000
0206          165 LEN=255                                                 219,000
0207              CALL WRITE(CODES(J),LEN,16386,ELNUM,2)                  220,000
0208              J=J+255                                                 222,000
0209              J1=J1-255                                               223,000
0210              ELNUM=ELNUM+1                                           224,000
0211              GO TO 164                                               225,000
0212          168 LEN=J1                                                  225,250
0213              CALL WRITE(CODES(J),LEN,16386,ELNUM,2)                  225,500
0214              CODL=ELNUM+20                                           226,000
                C                                                         227,000
                C   CHECK DEFAULT OPTION                                 228,000
                C                                                         229,000
0215          170 IF(.NOT.DSW)GO TO 175                                   230,000
```

```
0216                WRITE(6,9035)                                                231,000
0217          9035 FORMAT(' ENTER DEFAULT:')                                     232,000
0218                READ(5,9031) (IN(I),I=22,26)                                 233,000
0219                IF(NSW.OR.NCODES.LE.0)GO TO 175                              234,000
0220                J1=1                                                         235,000
0221                DO 172 I=1,NCODES                                            236,000
0222                IF(LCOMC(CFW,CODES(J1),IN(22)))172,173,172                   237,000
0223           172 J1=J1+LFW                                                     238,000
0224                WRITE(6,9036)                                                239,000
0225          9036 FORMAT(' DEFAULT NOT IN CODE LIST ')                          240,000
0226                GO TO 170                                                    241,000
0227           173 IF(ONESW)INS(85)=IONE                                         242,000
0228                IF(TWOSW)IDEF=ITWO                                           242,200
                C                                                              243,000
                C   WRITE OUT QUESTION INTO UTILITY FILE                        244,000
                C                                                              245,000
0229           175 LNUM=-ILNUM=IVAR                                              246,000
0230                CALL WRITE(IN,ILEN,16386,LNUM,2)                             247,000
0231           180 CONTINUE                                                      248,000
0232                IVAR=IVL+1                                                   248,250
0233                GO TO IBR, (110,120,130,140)                                 249,000
                C                                                              300,000
                C   CHANGE COMMAND                                             301,000
                C                                                              302,000
0234           200 CALL KEYIN(STRING,3,CMOD,5,CKEY,MSW,KSW,KEYVAL,LEN,&10,&10,&10)  303,000
0235                IF(.NOT.KSW(1))GO TO 290                                     304,000
0236                DO 205 I=1,4                                                 305,000
0237                IF(EQUC(STRING(KEYVAL(1,1)),STYPE(I)))GO TO 210              306,000
0238           205 CONTINUE                                                      307,000
0239                GO TO 291                                                    308,000
0240           210 IF(.NOT.KSW(2))GO TO 220                                      309,000
0241                CALL DECODE(STRING,3,CMOD,5,CKEY,MSW,KSW,KEYVAL,             310,000
                   1            2,KEYVAL(1,2),KEYVAL(2,2),NGR,II,I2,&10,&10,&200)  311,000
0242                GLNUM=GRL(I)+NGR-1                                           312,000
0243                CALL READ(GRIN,LEN,16386,-GLNUM,2,&292)                      313,000
0244                WRITE(6,9200) (GRIN(I),I=3,17)                               314,000
0245          9200 FORMAT(' PREVIOUS GRP QUES: ',15A4/' ENTER NEW GRP QUES:')    315,000
0246                READ(5,9011) (GRIN(I),I=3,17)                                316,000
0247                CALL WRITE(GRIN,GLEN,16386,-GLNUM,2)                         317,000
0248                GO TO 10                                                     318,000
                C                                                              319,000
                C   PROCESS INDIVIDUAL QUESTIONS                               320,000
                C                                                              321,000
0249           220 IF(.NOT.KSW(3))GO TO 293                                      322,000
0250                CALL DECODE(STRING,3,CMOD,5,CKEY,MSW,KSW,KEYVAL,3,           323,000
                   1            KEYVAL(1,3),KEYVAL(2,3),IVAR,II,I2,&10,&10,&200)  324,000
0251                LNUM=IDVL(I)+IVAR                                            325,000
0252                CALL READ(IN,LEN,16386,-LNUM,2,&294)                         326,000
                C                                                              327,000
                C   CHECK FOR REPLACEMENT OF LONG QUES                         328,000
                C                                                              329,000
0253                IF(.NOT.MSW(1))GO TO 230                                     330,000
0254                WRITE(6,9201) (INS(I),I=30,68)                               331,000
0255          9201 FORMAT(' PREVIOUS FULL QUES: ',39A1/' ENTER NEW FULL QUES:')  332,000
0256                READ(5,9025) (INS(I), I=30,68)                               333,000
```

```
                C                                                                    334,000
                C   CHECK FOR TERSE QUESTION                                       335,000
                C                                                                    336,000
0257              230 IF(.NOT.MSW(2))GO TO 240                                       337,000
0258                  WRITE(6,9202) (INS(I),I=70,84)                                 338,000
0259             9202 FORMAT(' PREVIOUS ABBR QUES: ',15A1/' ENTER NEW ABBR QUES:')   339,000
0260                  READ(5,9027) (INS(I),I=70,84)                                  340,000
0261                  CALL SCANR(':',INS,70,84,II,&235)                              341,000
0262                  ECHOL=II-70                                                    342,000
0263                  IF(ECHOL)235,235,240                                           343,000
0264              235 WRITE(6,9028)                                                  344,000
0265                  GO TO 230                                                      345,000
                C                                                                    346,000
                C   CHECK SWITCHES                                                  347,000
                C                                                                    348,000
0266              240 IF(.NOT.MSW(3))GO TO 250                                       349,000
0267                  WRITE(6,9020)IVAR                                              350,000
0268                  READ(5,9021,ERR=240) (SW(I),I=1,10)                            351,000
                C                                                                    352,000
                C   CHECK FOR REPLACEMENT CODE AND DEFAULT                         353,000
                C                                                                    354,000
0269              250 IF(.NOT.(KSW(4).OR.KSW(5)))GO TO 270                           355,000
0270                  IF(KSW(4).AND.NCODES.LE.0)GO TO 259                            356,000
0271                  J=1                                                            357,000
0272                  DO 255 II=SLNUM,ELNUM                                          358,000
0273                  CALL READ(CODES(J),LEN,16386,II,2)                             359,000
0274              255 J=J+255                                                        360,000
0275                  J1=LEN                                                         360,500
0276                  J=1                                                            361,000
0277                  IF(.NOT.KSW(4))GO TO 260                                       361,500
0278                  DO 256 II=1,NCODES                                             362,000
0279                  IF(LCOMC(CFW,CODES(J),STRING(KEYVAL(1,4))))256,257,256         363,000
0280              256 J=J+LFW                                                        364,000
0281                  WRITE(6,9203)                                                  365,000
0282             9203 FORMAT(' CANNOT FIND CODE')                                    366,000
0283                  GO TO 10                                                       367,000
0284              259 WRITE(6,9215)                                                  367,200
0285             9215 FORMAT(' CANNOT REPLACE CODE IF NCODES = 0 ')                  367,400
0286                  GO TO 260                                                      367,600
0287              257 II=J+LFW-1                                                     368,000
0288                  WRITE(6,9204) (CODES(I),I=J,II)                                369,000
0289             9204 FORMAT(' PREVIOUS CODE:',40A1/' ENTER NEW CODE;')              370,000
0290                  READ(5,9031) (CODES(I),I=J,II)                                 371,000
0291              260 IF(.NOT.KSW(5))GO TO 267                                       371,100
0292                  IF(.NOT.DSW)GO TO 266                                          371,150
0293                  IF(NSW.OR.NCODES.LE.0)GO TO 265                                371,170
0294                  J=1                                                            371,200
0295                  DO 261 II=1,NCODES                                             371,300
0296                  IF(LCOMC(CFW,CODES(J),STRING(KEYVAL(1,5))))261,262,261         371,400
0297              261 J=J+LFW                                                        371,500
0298                  WRITE(6,9036)                                                  371,600
0299                  GO TO 267                                                      371,700
0300              262 I=II                                                           371,750
0301                  IF(NSW.OR.NCODES.LE.0)CALL MOVEC(LFW,CODES(J),IN(22))          371,780
0302                  IF(ONESW)INS(85)=IONE                                          371,810
```

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0303              IF(TWOSW)IDEF=ITWO                                                    371,840
0304              GO TO 267                                                             371,900
0305          265 CALL MOVEC(LEW,STRING(KEYVAL(1,5)),IN(22))                            372,000
0306              GO TO 267                                                             372,100
0307          266 WRITE(6,9205)                                                         372,200
0308         9205 FORMAT(' DEFAULT SWITCH NOT SET ')                                    372,300
0309          267 J=1                                                                   372,600
0310              IF(SLNUM.EQ.ELNUM)GO TO 269                                           373,000
0311              II=ELNUM-1                                                            374,000
0312              LEN=255                                                               375,500
0313              DO 268 I=SLNUM,II                                                     376,000
0314              CALL WRITE(CODES(J),LEN,16386,I,2)                                    377,000
0315          268 J=J+255                                                               378,000
0316          269 LEN=J1                                                                379,000
0317              CALL WRITE(CODES(J),LEN,16386,ELNUM,2)                                380,000
                C                                                                       381,000
                C   WRITE OUT LINE                                                     382,000
                C                                                                       383,000
0318          270 CALL WRITE(IN,ILEN,16386,-LNUM,2)                                     384,000
0319              GO TO 10                                                              385,000
                C                                                                       386,000
                C   ERROR COMMENTS                                                     387,000
                C                                                                       388,000
0320          290 WRITE(6,9210)                                                         389,000
0321         9210 FORMAT(' NO SECTION TYPE SPECIFIED ')                                 390,000
0322              GO TO 10                                                              391,000
0323          291 WRITE(6,9211)                                                         392,000
0324         9211 FORMAT(' INVALID SECTION TYPE SPECIFIED ')                            393,000
0325              GO TO 10                                                              394,000
0326          292 WRITE(6,9212)                                                         395,000
0327         9212 FORMAT(' INVALID GRP NUMBER ')                                        396,000
0328              GO TO 10                                                              397,000
0329          293 WRITE(6,9213)                                                         398,000
0330         9213 FORMAT(' NEITHER "GRP=" NOR "IND=" SPECIFIED ')                       399,000
0331              GO TO 10                                                              400,000
0332          294 WRITE(6,9214)                                                         401,000
0333         9214 FORMAT(' INVLID INDIVIDUAL QUESTION SPECIFIED ')                      402,000
0334              GO TO 10                                                              403,000
                C                                                                       500,000
                C   LIST COMMAND                                                       501,000
                C                                                                       502,000
                C   KEYWORDS: SECT                                                     503,000
                C   MODIFIERS: NOCODES GROUP INDIVIDUAL ALL                           504,000
                C                                                                       505,000
0335          300 CALL KEYIN(STRING,4,LMOD,1,CKEY,MSW,KSW,KEYVAL,LEN,&10,             506,000
                   1           &10,&10)                                               507,000
0336              IF(.NOT.KSW(1))GO TO 309                                            508,000
0337              II=1                                                                508,500
0338              DO 305 I=1,4                                                        509,000
0339              IF(EQUC(STRING(KEYVAL(1,1)),STYPE(1)))GO TO 310                     510,000
0340          305 CONTINUE                                                            511,000
0341              GO TO 291                                                           512,000
0342          309 II=0                                                                513,000
0343              I=0                                                                 514,000
0344          310 IF(II.EQ.0)I=I+1                                                    515,000
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```
0345                IF(I.GT.4)GO TO 10                                          516,000
0346                GLNUM=GRL(I)                                                517,000
0347                LNUM=IDVL(I)                                                518,000
                  C                                                             519,000
                  C   READ GROUP QUESTION                                       520,000
                  C                                                             521,000
0348              311 CALL READ(GRIN,GLEN,16386,*GLNUM,2,&310)                  522,000
0349                GLNUM=GLNUM+1                                               523,000
0350                IF(MSW(3).AND..NOT.MSW(2))GO TO 320                         524,000
0351                WRITE(6,9301) (GRIN(K),K=3,17)                              525,000
0352             9301 FORMAT('0',15A4)                                          526,000
                  C                                                             527,000
                  C   READ INDIVIDUAL QUESTION                                 528,000
                  C                                                             529,000
0353              320 IF(MSW(2).AND..NOT.MSW(3))GO TO 311                       530,000
0354                DO 340 II=IVS,IVL                                           531,000
0355                LNUM=LNUM+1                                                 531,500
0356                CALL READ(IN,LEN,16386,*LNUM,2,&340)                        532,000
0357                WRITE(6,9302) (INS(K),K=30,68),(INS(K),K=70,84)             534,000
0358             9302 FORMAT(' ',39A1/' ',15A1)                                 535,000
0359                IF(.NOT.MSW(4))GO TO 330                                    536,000
0360                WRITE(6,9303) NCODES,LFW,CFW,FW                             537,000
0361             9303 FORMAT(' NCODES=',I4,' LFW=',I2,' CFW=',I2,' FW=',I2)     538,000
0362                DO 321 K=1,10                                               539,000
0363                SW(K)=0                                                     540,000
0364                IF(INS(100+K))SW(K)=1                                       541,000
0365              321 CONTINUE                                                  542,000
0366                WRITE(6,9304) (SW(K),K=1,10)                                543,000
0367             9304 FORMAT(' DSW=',I1,' MDSW=',I1,' DASW=',I1,' TMSW=',I1,    544,000
                    1        ' NSW=',I1/' MODSW=',I1,' MAKSW=',I1,' VDISW=',I1,  545,000
                    2        ' VEHSW=',I1,' PASSW=',I1)                          545,200
0368                IF(NSW.OR.NCODES.LE.0)GOTO 330                              545,300
0369                K=1                                                         545,400
0370                IF(TWOSW)K=2                                                545,500
0371                WRITE(6,9307)K                                              545,600
0372             9307 FORMAT(' OUTPUT WIDTH =',I2)                              545,700
0373              330 IF(NSW.OR.NCODES.LE.0)GO TO 329                           549,000
0374                IF(MSW(1).AND..NOT.DSW)GO TO 340                            549,200
0375                K1=1                                                        550,000
0376                DO 335 K=SLNUM,ELNUM                                        551,000
0377                CALL READ(CODES(K1),LEN,16386,K,2)                          552,000
0378              335 K1=K1+LEN                                                 553,000
0379                IF(MSW(1))GO TO 329                                         553,500
0380                K1=1                                                        554,000
0381                DO 336 K=1,NCODES                                           555,000
0382                K2=K1+LFW-1                                                 556,000
0383                WRITE(6,9306) (CODES(K3),K3=K1,K2)                          557,000
0384             9306 FORMAT(' ',40A1)                                          558,000
0385              336 K1=K1+LFW                                                 559,000
                  C*** WRITE OUT DEFAULT                                        559,100
0386              329 IF(.NOT.DSW)GO TO 340                                     559,200
0387                IF(NSW.OR.NCODES.LE.0)GO TO 334                             559,220
0388                I=0                                                         559,240
0389                IF(ONESW)IONE=INS(85)                                       559,260
0390                IF(TWOSW)ITWO=IDEF                                          559,280
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0391              K1=(I-1)*LFW+1                                                559,300
0392              K2=K1+LFW-1                                                   559,320
0393              WRITE(6,9308)(CODES(K3),K3=K1,K2)                             559,340
0394           9308 FORMAT(' DEFAULT=',40A1)                                    559,345
0395              GO TO 340                                                     559,360
0396            334 WRITE(6,9305) (IN(K),K=22,26)                               559,400
0397           9305 FORMAT(' DEFAULT=',5A4)                                     559,600
0398            340 CONTINUE                                                    560,000
0399              IF(II)311,311,10                                              561,000
                C                                                             600,000
                C   ADD COMMAND = TO ADD A NEW ANSWER                         601,000
                C                                                             602,000
                C   KEYWORDS:  SECT INDIVIDUAL                                603,000
                C                                                             604,000
0400            400 CALL KEYIN(STRING,0,LMOD,3,CKEY,MSW,KSW,KEYVAL,LEN,&10,&10,&10)  605,000
0401              IF(.NOT.KSW(1))GO TO 290                                      606,000
0402              DO 405 I=1,4                                                  607,000
0403              IF(EQUC(STRING(KEYVAL(1,1)),STYPE(I)))GO TO 410               608,000
0404            405 CONTINUE                                                    609,000
0405              GO TO 291                                                     610,000
                C                                                             611,000
                C   DECODE VARIABLE NUMBER AND READ "IN" ARRAY                612,000
                C                                                             613,000
0406            410 CALL DECODE(STRING,0,LMOD,3,CKEY,MSW,KSW,KEYVAL,3,        614,000
                   1            KEYVAL(1,3),KEYVAL(2,3),IVAR,I1,I2,&10,&10,&10)  615,000
0407              LNUM=IDVL(I)+IVAR                                             616,000
0408              CALL READ(IN,LEN,16386,-LNUM,2,&294)                          617,000
0409              IF(NCODES.LE.0)GO TO 440                                      618,000
                C                                                             619,000
                C   READ NUMBER OF NEW ANSWERS AND THEN THE ANSWERS           620,000
                C                                                             621,000
0410            412 WRITE(9,9402)(IN(I),I=18,21),NCODES                       622,000
0411           9402 FORMAT(' VARIABLE: ',4A4/' NCODES=',I4/                   623,000
                  1' ENTER NUMBER OF NEW ANSWERS:')                           624,000
0412              READ(5,9021,ERR=412)I                                         625,000
0413              IF(I)441,441,411                                              626,000
0414            411 IF(I.GT.50)GO TO 412                                        627,000
0415              J=1                                                           628,000
0416              DO 415 K=SLNUM,ELNUM                                          629,000
0417              CALL READ(CODES(J),LEN,16386,K,2)                             630,000
0418            415 J=J+LEN                                                     631,000
0419              DO 418 K=1,I                                                  632,000
0420              READ(5,9031,END=412)CODSP                                     633,000
0421              CALL MOVEC(LFW,CODSP,CODES(J))                                634,000
0422            418 J=J+LFW                                                     635,000
                C                                                             636,000
                C   WRITE OUT NEW ANSWERS                                     637,000
                C                                                             638,000
0423              ELNUM=SLNUM                                                   639,000
0424              J=J-1                                                         640,000
0425              J1=1                                                          641,000
0426            419 IF(J-255)421,421,420                                        642,000
0427            420 LEN=255                                                     643,000
0428              CALL WRITE(CODES(J1),LEN,16386,ELNUM,2)                       644,000
0429              J1=J1+255                                                     645,000
```

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0430                J=J+255                                                  646,000
0431                ELNUM=ELNUM+1                                            647,000
0432                GO TO 419                                                648,000
0433              421 LEN=J                                                  649,000
0434                CALL WRITE(CODES(J1),LEN,16386,ELNUM,2)                  650,000
                  C                                                          651,000
                  C   RESET NCODES AND WRITE OUT "IN" ARRAY                  652,000
                  C                                                          653,000
0435                NCODES=NCODES+I                                          654,000
0436                LEN=120                                                  655,000
0437                CALL WRITE(IN,LEN,16386,-LNUM,2)                         656,000
0438                GO TO 10                                                 657,000
                  C*** SOME ERROR COMMENTS                                   658,000
0439              440 WRITE(6,9403)NCODES                                    659,000
0440             9403 FORMAT(' NCODES=',I4)                                  660,000
0441                GO TO 294                                                661,000
0442              441 WRITE(6,9404)I                                         662,000
0443             9404 FORMAT(' NO. OF NEW ANSWERS=',I4)                      663,000
0444                GO TO 10                                                 664,000
                  C                                                          800,000
                  C   WRITE OUT ALL INFO                                    801,000
                  C                                                          802,000
0445             1000 LEN=20                                                 803,000
0446                LNUM=-20000                                              804,000
0447                CALL WRITE(PARM,LEN,16386,LNUM,2)                        805,000
0448                J=ANUM+VNUM+DNUM+PNUM                                    806,000
0449                I=1                                                      807,000
0450             1001 IF(J-8)1003,1003,1002                                  808,000
0451             1002 LEN=64                                                 809,000
0452                LNUM=LNUM+1                                              810,000
0453                CALL WRITE(VNAME(I),LEN,16386,LNUM,2)                    811,000
0454                I=I+8                                                    812,000
0455                J=J-8                                                    813,000
0456                GO TO 1001                                               814,000
0457             1003 IF(J)1005,1005,1004                                    815,000
0458             1004 LEN=J*8                                                816,000
0459                LNUM=LNUM+1                                              817,000
0460                CALL WRITE(VNAME(I),LEN,16386,LNUM,2)                    818,000
0461             1005 CALL SYSTEM                                            819,000
0462                END                                                      820,000
```

SUBPROGRAMS CALLED

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
READ	4B0	SPRINT	4B4	SETPFX	4B8	FILLB	4BC	SCARDS	4C0
SCANR	4C4	IBCOM#	4C8	WRITE	4CC	FILLC	4D0	MOVEC	4D4
LCOMC	4D8	KEYIN	4DC	EQUC	4E0	DECODE	4E4	SYSTEM	4E8

EQUIVALENCE DATA MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
SECTN	910	SECT	910	ACC	910	VEH	911	DR	912
OCC	913	STRING	914	COM	914	IN	824	INS	824
SLNUM	824	ELNUM	828	NCODES	82C	LFW	830	CF#	834
FW	838	COL	83C	IDEF	878	ECHOL	88C	DS#	892
MDSW	891	DASW	892	TMS#	893	NSW	894	MODSW	895
MAKS#	896	VDIS#	897	VEHS#	898	PASSW	899	ONESW	89A
TWOS#	89B	I	89C	ION	89C	ITWO	89E	IONE	89F
GRIN	8A0	IVS	8A0	IVL	8A4	PARM	8E4	ANUM	8E4
VNUM	8E6	DNUM	8E8	PNUM	8EA	ACOL	8EC	VCOL	8EE
DCOL	8F0	PCOL	8F2	CODL	8F4				

SCALAR MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
LNUM	8F8	J	8FC	GLNUM	C00	ILNUM	C04	ICOL	C08
IBR	C0C	NGR	C10	IVAR	C14	GNUM	C18	J1	C1C
II	C20	I2	C24	K	C28	K1	C2C	K2	C30
K3	C34	ILEN	C38	GLEN	C3A	LEN	C3C	QUES	C3E
SLASH	C3F	I1	C40						

ARRAY MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
SW	C42	COMD	C52	STYPE	C66	CODES	C6A	VNAME	FF0
CODSP	1248	GRL	1270	IDVL	1280	LMOD	1290	CMOD	1250
CKEY	12C8	KEYVAL	12F0	MS#	1340	KSW	134A		

FORMAT STATEMENT MAP

SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION	SYMBOL	LOCATION
9001	1389	9002	1382	9003	1386	9004	13DF	9005	1427
1150	1431	9010	1453	9011	1460	9020	1473	9021	14C0
9040	14C6	9022	14EF	9023	1508	9024	1511	9025	152A
9026	1530	9027	1547	9028	1540	9030	1568	9031	1550
9035	1586	9036	1599	9200	1587	9201	15EA	9202	161F
9203	1654	9215	1669	9204	1690	9205	16BA	9210	16D6
9211	16F5	9212	1719	9213	1731	9214	175A	9301	1784
9302	178D	9303	179E	9304	17C6	9307	1832	9306	1845
9308	184E	9305	185F	9402	1870	9403	1880	9404	188E

OPTIONS IN EFFECT ID,EBCDIC,SOURCE,NOLIST,NODECK,LOAD,MAP
OPTIONS IN EFFECT NAME = MAIN , LINECNT = 57
STATISTICS SOURCE STATEMENTS = 462,PROGRAM SIZE = 15014
STATISTICS NO DIAGNOSTICS GENERATED

NO STATEMENTS FLAGGED IN THE ABOVE COMPILATIONS.

APPENDIX C

SELECTIONS FROM SEPP: SAMPLING ERROR PROGRAM PACKAGE*

*By Leslie Kish, Martin R. Frankel, and Neal Van Eck; Ann Arbor: The University of Michigan Institute for Social Research; no date.

I. Sampling Error Program Package (SEPP)

A Introduction

The SEPP (Sampling Error Program Package) currently consists of three sets of computer programs which produce sampling errors. The BRRP (Balanced Repeated Replication Package) computes sampling errors using the method of Balanced Repeated Replications. At present it can compute these sampling errors for ratio means, simple differences of ratio means, simple correlation coefficients, multiple regression coefficients (standardized and unstandardized), (p-1) order partial correlation coefficients, and multiple correlation coefficients.

The PSALMS (Paired Selection Algorithm for Multiple Subclasses) computes sampling errors using a method based on the Taylor approximation (also known as the δ or delta method, or linearization, or propogation of error, and sometimes the Keyfitz method). At present it can compute sampling errors for simple ratios, and linear combinations of ratios (e.g., differences of ratio). Unlike BRRP it can easily deal with many ratios from different subclasses of the sample in a single run. In addition, unlike BRRP, it is designed to deal automatically with post-stratification class weights, although this option has not yet been checked out and cannot be used at present. ABSERD is a simpler and more modest program appended as a useful addition to the two major programs.

B Choice of Programs

This is a reproduction of the paper by Leslie Kish, "Multipurpose Programs for Sampling Errors," Proceedings of the International Institute, Washington, D. C., August, 1971.

MULTIPURPOSE PROGRAMS FOR SAMPLING ERRORS

Leslie Kish, Institute for Social Research
University of Michigan

1. Introduction

The theory of survey sampling deals largely and adequately with the estimation of variances for sample means and aggregates based on designed samples. However, that theory does not satisfy the needs of survey practitioners. First, the aims and results of most surveys cannot be expressed in one or two statistics, but in scores, hundreds or thousands -- too many for the standard methods of computing and presenting sampling errors. Second, the needed statistics are usually not ordinary sample means, but the means and differences of means of subclasses which cut across the sample designs. Third, survey research results are increasingly often expressed in multiple regressions and other analytical statistics.

This divorce of theory and practice has illegitimate results. Most frequently the sampling errors of survey statistics are not computed, or they are computed and presented with simple random sampling (srs) assumptions (pq/n); this is sometimes improved with a "borrowed" factor for the design effect.

Sampling statisticians have often deplored this situation; several have devised diverse robust methods of simplified computations of sampling errors [Kish and Frankel, 1970]. We cannot review that background, but merely present the three computing programs we now have at our Institute. They are available and have been used by others too.

I am chiefly responsible only for their statistical strategies. Of the several programers who have contributed, here I can and must single out Neal Van Eck and Dr. Martin R. Frankel who was for five years the Janus in this interface of statistics and programing [Kish, Frankel, Van Eck, 1971].

2. Choice Among Three Programs

Of the three programs, ABSERD (A Basic program for Sampling Errors of Ratios and Differences) is a modest afterthought to two major programs. It computes several

statistics of sampling errors (as noted below) for a ratio mean, or for two ratios and their difference. If only a few of these are needed ABSERD is economical, simple and flexible. Its results could be had with desk computers, whereas the other two programs demonstrate amply the indispensable need for high-speed computers.

PSALMS (Paired Selection ALgorithms for Multiple Subclasses) is the program most needed for survey statistics when there are many ratios, their differences and linear functions. These statistics, based on many subclasses and for many characteristics (variables), form the typical output of most multipurpose surveys. Computing a large number of these economically has been a challenge that PSALMS was designed to meet, and it represents a major computing effort.

BRRP (Balanced Repeated Replication Program), another major effort, is designed for sampling errors of multiple regressions, and analytical statistics. Mathematical methods for them are intractable, and this robust, flexible and general method is much needed. It can be viewed as a jack-knife (hence replication) method, modified by repeating the replications in the computations in order to increase the precision of the variance estimate. It can be used to obtain most sampling errors needed for surveys. However, PSALMS (or ABSERD) is more economical for ratios, and BRRP is needed when other methods fail.

3. Features Common to the Program

a) Outputs of sampling errors include variances and standard errors; also variances under srs assumptions, and ratios of actual to srs variances, called deff; also $\sqrt{\text{deff}}$. For ratio means $r = \Sigma y/\Sigma x$, the output also includes the coefficient of variation of x; when this is high (say over 0.2) both the estimate r and its variance should be treated with caution. Other appropriate statistics are also given in the separate outputs of the three programs.

b) Subclasses (domains) as bases (x) for the statistics can be handled easily with distinct features of PSALMS and ABSERD.

c) Replicates form the basic computing units of

each program. The variance is estimated in a single stage from the replicates; these are units elsewhere called primary selections [Kish, 1965], ultimate clusters [Hansen, 1953], replications [Deming, 1960], or PSU's. Two selections per stratum is the basic model, but accommodations to other designs are possible.

d) Weights for data cases can be readily used in each program.

4. PSALMS (Paired Selection ALgorithm for Multiple Subclasses)

a) It computes sampling errors for ratio means $r = y/x$ and functions of them. Typical outputs are sampling errors for two subclass means $\bar{y}_a$ and $\bar{y}_b$, also for their difference $(\bar{y}_a - \bar{y}_b)$. It deals similarly with linear functions $\Sigma k_a r_a$ and the several ratios r_a combined with constants k_a. Post-stratified means $\Sigma p_a r_a$ are also treated. Extensions to ratios of ratios (r_a/r_o) and index numbers $(\Sigma r_a/r_o)$ are feasible.

b) It computes sampling errors for many statistics simultaneously with a single pass of the input. It builds several hundred vectors (each a variable summed over a replicate) which carry all the data needed for diverse characteristics (y) based on various subclasses (x). Sampling errors for many statistics are often needed; simultaneous computing is economical of both machine and man hours.

c) The L1 and L2 assembly languages in which the program is written greatly enhance the program's economy. These simple languages can be learned readily by nonprogrammers. For example, in L1 the sentence B1 IF X101 = 1-4; defines the subclass B1 as codes 1-4 in variable 101. Then B2 IF B1 AND X79 = 3; defines within B1 a subset B2 as having code 3 in variable 79. Also define B3 IF X101 = 5; and B4 IF B3 AND X79 = 3; in L1. Then the L2 sentence R1 = B2/B1 - B3/B4; completes the order for all sampling errors for subclass means and for their difference.

d) The program needs an IBM 360-40 or larger. It also requires that the data be identified with and sorted into replicates, and these ordered into a sequence determined by the stratified computation of the variance. The latter may be either pairs within strata or systematic, or a combination of the two.

5. BRRP (Balanced Repeated Replication Program).

a) Replicate moments are built by module AI: each is a sum over a replicate of moments of elements (data case) for specified variables. These replicate moments, in the present program are sums, sums of squares and sums of cross products; case weights, can be inserted as $\Sigma w_i y_i$, $\Sigma w_i y_i^2$, and $\Sigma w_i y_i x_i$.

b) Replication moments are summed by module AII from the replicate moments. Selection of replicates for replications is done with parameter cards as designed. Half-sample replication from two selections per stratum is the basic design: in each stratum one of two replicates is selected for each replication. There are k repeated replications. The selections (1) and exclusions (0) can be designed for a balanced design of repetitions.

c) Statistics are computed by module AIII from the replication moments. For example, the regression $y = \hat{b}_1 x_1 + \hat{b}_2 x_2 \ldots + \hat{b}_p x_p$ is computed for the entire sample, and for the k repeated replications $y = b_{1j} x_1 + b_{2j} x_2 \ldots + b_{pj} x_p$ $(j = 1, 2 \ldots k)$. This module is a standard program for research statistics, and often includes srs variance estimates for the estimates b.

d) Variances for each of the p statistics b_j can be computed by module AIV as $\Sigma(b_j - \hat{b})^2/k$. Each of the k values $(b_j - \hat{b})^2$ estimates the variance; the mean of k repetitions is needed to obtain adequate precision. The precision available in paired replicates from strata is obtained (practically) with k balanced repeated replications, where k is a multiple of 4 greater than the number of strata. Slight improvements are possible from $\Sigma[(b'_j - \hat{b})^2 + (b_j - \hat{b})^2]/2k$, where b'_j and b_j are based on complement halves.

Variances are also computed on correlation coefficients (first order and partial), and other statistics. Also design effects and $\sqrt{deff}$, when srs variances are available.

e) Instead of the half-sample replication described in (b), module AII can build alternative types. Particularly we were interested in a jack-knife that leaves out one replicate only from each replication. A large scale simulation research with empirical data investigated both methods of replication, as well as a "delta" method of Taylor approximations. All three

methods performed well, but half-sample replication best of all. This research provides a reassuring base for BRR methods [Frankel, 1971].

6. ABSERD (A Basic Sampling Error Program for Ratios and Differences).

a) With a single input and output it yields sampling errors for two ratios and for their difference. The program finds and reads the needed variables as they occur on the data records--whether these are cards, tape or disk. Designating those variables is done in FORTRAN, e.g., tape positions 4-6, 107, 108, will be read in with 3X, F3.0, 100X, 2F1.0.

b) Subclasses as sample bases are designated with a simple routine of subsample cards.

c) Replicates are defined with a simple routine which can combine into one replicate several designated PSU's, e.g., for the first stratum to form a pair of replicates from PSU's 137, 12 and 13 versus PSU 14 write bbb137 + bbb12 + bbb13, bbb14,..from a replicates the program forms either a/2 stratified pairs, or (a-1) systematic differences.

d) We need not group or order the data records into replicates nor into any special set or order. Data records are used as they exist; the program does all the needed ordering into subclasses, and into replicates.

e) Modest size machines of the IBM 360 series are sufficient for the program. It was also modified to run in IBM 1130 FORTRAN IV, which works for both the newer machines and for many older and smaller models.

* * * * * * *

Summary

We describe three programs for computing sampling errors on a large scale. Among common features is a basic model of two replicates per stratum; easy access to subclasses for bases of the estimates; the output includes design effects of actual variance to simple random variance. The functions of the three programs are complementary and their methods are distinct. ABSERD is a small basic program for ratio means and the difference of two ratios. PSALMS yields sampling errors for many statistics with one pass of the input disk, easily and economically; the statistics can be ratio means and differences or other linear functions based on the ratios. BRPP is a

program of balanced repeated replications. This is a general and robust method for variances of most statistics; it is indispensable for complex analytical statistics, such as multivariate regressions.

LES PROGRAMMES A PLUSIEURS BUTS POUR DES ERREURS D'ECHANTILLONNAGE

Nous décrivons trois programmes pour calculer sur une grande échelle des erreurs d'échantillonnage. Un modèle de base est, parmi des traits communs des programmes, deux replicates (tirages) par strate; aussi un accès facile aux sous-classes comme base pour les valeurs estimées; aussi le débit renferme les effets du plan de la variance réele jusqu'à la variance aléatoire simple. Les fonctions des trois programmes sont complémentaires et leurs méthodes sont distinctes. ABSERD est un petit programme de base pour les moyennes de rapport et les différences entre deux rapports. PSALMS rend des erreurs d'échantillonnage pour beaucoup de statistique avec un seul défilé du disque, facilement et économiquement; la statistique peut être la moyenne de rapport, aussi les différences ou les autres fonctions linéares basées sur les rapports. BRPP est un programme des répétitions équilibrées et réitérées. C'est une méthode générale et robuste pour les variances de la plupart des statistiques; c'est indispensable en ce qui concerne les statistiques complexes and analytiques telle que les regressions à plusieurs variables.

References

Deming, W. E., [1960], Sample Design in Business Research, New York: John Wiley and Sons.

Hansen, M. H., Hurwitz, W. N., and Madow, W. G., [1953], Sampling Survey Methods and Theory, New York: John Wiley and Sons.

Frankel, M. R., [1971], Inference from Survey Samples, Ann Arbor: Institute for Social Research, pp. 174, $5.00.

Kish, L., [1965], Survey Sampling, New York: John Wiley and Sons.

Kish, L., and Frankel, M. R., [1970],"Balanced Repeated Replications for Sampling Errors," Journal of the American Statistical Association, 65, 1071-94.

Kish, L., Frankel, M. R., and Van Eck, N., [1971], SEPP: Sampling Error Programs Package, Ann Arbor: Institute for Social Research, publication planned.

McCarthy, P. J., [1969], "Pseudo-Replication: Half Samples," Review of the International Statistical Institute, 37, 239-64.

II.C Sampling Error Formulas Used By PSALMS

Notation

The letters B, Y, and X are used to denote variables. These are the letters used in Language 1 to denote Created Boolean, Created Integer, and Input (on tape or card) variables respectively. At a later point their use and effects on the processing algorithm will be discussed. However, at this point they are used interchangably

X'_{ijkh} denotes the value of the

i^{th}	Input variable	for the	
h^{th}	individual	in the	$h = 1,\ldots,H_{jk}$
k^{th}	class (post stratum)	of the	$k = 1,\ldots,K$
j^{th}	PSU		$j = 1,\ldots,J$

(similar definition for B'_{ijkh} and Y'_{ijkh})

Because the computation forms will handle successive as well as paired differences we have avoided a notation that would imply pairing of the PSU's.

W_{jkh} = the "weight" associated with the h^{th} individual in the k^{th} class of the j^{th} PSU.

An X, Y, or B written without the prime denotes the original variable multiplied by its weight

$$X_{ijkh} = X'_{ijkh} \cdot W_{jkh}$$

$$Y_{ijkh} = Y'_{ijkh} \cdot W_{jkh}$$

$$B_{ijkh} = B'_{ijkh} \cdot W_{jkh}$$

$P_1,\ldots P_k$ are prespecified constants (class weights)

G is an even integer, $0 \le G \le J$. All PSU's numbered less than or equal to G are assumed to have implicit pairing.

All PSU's greater than G will be used to form successive differences.

Statistics for which variance estimates are computed

This program will compute estimates of variance for Linear Forms and Index numbers. Both of these are functions of Basic Ratios:

$$\text{Basic Ratio} \equiv R(X_s, B_r) \qquad \sum_{k=1}^{K} P_k \left(\frac{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} X_{sjkh}}{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} B_{rjkh}} \right) \qquad (1)$$

Note: Ratios may be written with X's, Y's, or B's in numerator or denominator.

A. Linear Forms are defined to be any linear combination of up to 5 Basic Ratios:

$$\sum_{m=1}^{5} C_m \cdot R(X_m, B_m) \tag{2}$$

where $C_1, \ldots, C_5$ are constants.

The use of X_m, B_m is simply for notational convenience.

B. Index Numbers are defined to be any linear combination of up to 2 ratios of Basic Ratios:

$$\sum_{m=1}^{2} C_m \left(\frac{R(X_{2m-1}, B_{2m-1})}{R(X_{2m}, B_{2m})} \right) \tag{3}$$

where C_1 and C_2 are constants.

Again the use of X, and B is simply for notational ease.

Variance Estimation Formulas

A. Linear Forms

$$\text{VAR} \left(\sum_{m=1}^{5} C_m \, R(X_m, B_m) \right) \tag{4}$$

$$= \sum_{m=1}^{5} C_m^2 \, \text{VAR} \left(R(X_m, B_m) \right) + 2 \sum_{m<m'} C_m C_{m'} \, \text{COV} \left(R(X_m, B_m), R(X_{m'}, B_{m'}) \right)$$

here:

$$VAR\left(R(X_m, B_m)\right) = \sum_{j=1}^{G/2}\left[E_{2j-1}(X_m, B_m) - E_{2j}(X_m, B_m)\right]^2 \qquad (5)$$

$$+ \frac{J-G}{2(J-G-1)} \sum_{j=G+1}^{J-1}\left[E_j(X_m, B_m) - E_{j+1}(X_m, B_m)\right]^2$$

$$COV\left(R(X_m, B_m), R(X_{m'}, B_{m'})\right) \qquad (6)$$

$$= \sum_{j=1}^{G/2}\left[E_{2j-1}(X_m, B_m) - E_{2j}(X_m, B_m)\right]\left[E_{2j-1}(X_{m'}, B_{m'}) - E_{2j}(X_{m'}, B_{m'})\right]$$

$$+ \frac{(J-G)}{2(J-G-1)} \sum_{j=G+1}^{J-1}\left[E_j(X_m, B_m) - E_{j+1}(X_m, B_m)\right]\left[E_j(X_{m'}, B_{m'}) - E_{j+1}(X_{m'}, B_{m'})\right.$$

AND $$E_j(X_m, B_m) = \sum_{k=1}^{K} \left(\frac{p_k}{B_{m\cdot k\cdot}} \right) \left[X_{mjk\cdot} - R^{(k)}(X_m, B_m)\, B_{mjk\cdot} \right] \qquad (7)$$

$$B_{mjk\cdot} = \sum_{h=1}^{H_{jk}} B_{mjkh} \qquad (8)$$

$$B_{m\cdot k\cdot} = \sum_{j=1}^{J} \left(\sum_{h=1}^{H_{jk}} B_{mjkh} \right) = \sum_{j=1}^{J} B_{mjk\cdot} \qquad (9)$$

$$R^{(k)}(X_m, B_m) = \frac{(X_{m\cdot k\cdot})}{(B_{m\cdot k\cdot})} \qquad (10)$$

Note

1. In some cases the factor $\frac{P_k}{B_{m\cdot k\cdot}}$ will have been included in the weight W_{jkh}. By an appropriate signal to the program (main parameter card Col. 35 = 0 instead of 1) this factor will be eliminated from formula 7.

2. If $B_{m\cdot k\cdot}$ and $X_{m\cdot k\cdot}$ both are zero then $\frac{P_k}{B_{m\cdot k\cdot}}$ and $R^{(k)}(X_m, B_m)$ are set equal to zero in 7.

   If $B_{m\cdot k\cdot}$ is zero and $X_{m\cdot k\cdot}$ is not equal to zero an error indication is given.

3. Index Forms

$$\mathrm{VAR}\left(\sum_{m=1}^{2} C_m \left(\frac{R(X_{2m-1}, B_{2m-1})}{R(X_{2m}, B_{2m})}\right)\right) \tag{11}$$

$$= \sum_{m=1}^{2} C_m^2 \,\mathrm{VAR}\left(\frac{R(X_{2m-1}, B_{2m-1})}{R(X_{2m}, B_{2m})}\right) + 2C_1C_2\mathrm{COV}\left(\left(\frac{R(X_1, B_1)}{R(X_2, B_2)}\right), \left(\frac{R(X_3, B_3)}{R(X_4, B_4)}\right)\right)$$

Where:

$$\mathrm{VAR}\left(\frac{R(X_{2m-1}, B_{2m-1})}{R(X_{2m}, B_{2m})}\right) \tag{12}$$

$$= \sum_{j=1}^{G/2} \left[G_{2j-1}\left[X_{2m-1}, B_{2m-1}, X_{2m}, B_{2m}\right] - G_{2j}\left[X_{2m-1}, B_{2m-1}, X_{2m}, B_{2m}\right]\right]^2$$

$$+ \frac{J-G}{2(J-G-1)} \sum_{j=G+1}^{J-1} \left[G_j\left[X_{2m-1}, B_{2m-1}, X_{2m}, B_{2m}\right] - G_{j+1}\left[X_{2m-1}, B_{2m-1}, X_{2m}, B_{2m}\right]\right]^2$$

$$\text{COV}\left(\frac{R(X_1, B_1)}{R(X_2, B_2)}, \frac{R(X_3, B_3)}{R(X_4, B_4)}\right)$$

$$= \sum_{j=1}^{G/2} \left[G_{2j-1}(X_1, B_1, X_2, B_2) - G_{2j}(X_1, B_1, X_2, B_2)\right]\left[G_{2j-1}(X_3, B_3, X_4, B_4) - G_{2j}(X_3, B_3, X_4, B_4)\right]$$

$$+ \frac{J-G}{2(J-G-1)} \sum_{j=G+1}^{J-1} \left[G_j(X_1, B_1, X_2, B_2) - G_{j+1}(X_1, B_1, X_2, B_2)\right]\left[G_j(X_3, B_3, X_4, B_4) - G_{j+1}(X_3, B_3, X_4, B_4)\right] \quad (13)$$

AND

$$G_j\left[X_{2m-1}, B_{2m-1}, X_{2m}, B_{2m}\right]$$

$$= \frac{1}{[R(X_{2m}, B_{2m})]}\left[E_j(X_{2m-1}, B_{2m-1}) - \left(\frac{R(X_{2m-1}, B_{2m-1})}{R(X_{2m}, B_{2m})}\right) E_j(X_{2m}, B_{2m})\right] \quad (14)$$

1. Coefficients of Variation of PSU size

Each time a basic ratio within an index form contains a B(Boolean) variable in the denominator, the following "coefficient of variation" is computed:

$$\text{COEFF}\ (B_i) = \frac{\left(\dfrac{J \sum_{j=1}^{J} B_{ij..}^{2} - \left(\sum_{j=1}^{J} B_{ij..} \right)^{2}}{J-1} \right)^{1/2}}{\sum_{j=1}^{J} B_{ij..}} \qquad (15)$$

For all pairs of basic ratios within an index form which contain B(Boolean) variables in their denominators the following "coefficient of covariation" is computed:

$$\text{COCOEFF}\ (B_i, B_{i'}) = \frac{\left(\dfrac{J \sum_{j=1}^{J} B_{ij..} B_{i'j..} - \left(\sum_{j=1}^{J} B_{ij..} \right) \left(\sum_{j=1}^{J} B_{i'j..} \right)}{J-1} \right)^{1/2}}{\left(\left(\sum_{j=1}^{J} B_{ij..} \right) \left(\sum_{j=1}^{J} B_{i'j..} \right) \right)^{1/2}} \qquad (16)$$

2. Estimates of Design Effect

Whenever all basic ratios of a linear form contain a B(Boolean) variable in their denominator an estimate of the variance is computed under the assumption of simple random sampling. This is done for each of the basic ratios and for the entire linear form.

For the linear form this estimate is normally computed as:

$$\text{SRSVAR}\left(\sum_{m=1}^{5} C_m \cdot R(X_m, B_m)\right) = \sum_{m=1}^{5} C_m^2 . \text{SRSVAR}\left(R(X_m, B_m)\right) \qquad (17)$$

However, the user may specify [by adding COV after the ";" in the L2 statement defining the linear form]

$$\text{SRSVAR}\left(\sum_{m=1}^{5} C_m \cdot R(X_m, B_m)\right) \qquad (18)$$

$$= \sum_{m=1}^{5} C_m^2 \, \text{SRSVAR}\left(R(X_m, B_m)\right) + 2 \sum_{m<m'} C_m C_{m'} \, \text{SRSCOV}\left(R(X_m, B_m), R(X_{m'}, B_{m'})\right)$$

The computing formulas for estimating SRSVAR $\left(R(X_m, B_m)\right)$ and SRSCOV $\left(R(X_m, B_m)\right)$, $R(X_{m'}, B_{m'})$ are:

$$\text{SRSVAR } R(X_m, B_m) = \frac{\left(\sum_{k=1}^{K} P_k\right)^2}{\sum_{k=1}^{K}\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} B'_{mjkh}} \left[\left(\frac{\sum_{k=1}^{K} P_k \left(\frac{\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} W_{jkh} X'^2_{mjkh}}{\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh}} \right)}{\sum_{k=1}^{K} P_k} \right) - \left(\frac{\sum_{k=1}^{K} P_k \left(\frac{\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} W_{jkh} X'_{mjkh}}{\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh}} \right)}{\sum_{k=1}^{K} P_k} \right)^2 \right] \quad (19)$$

$$\text{SRSCOV } (R(X_m, B_m), R(X_{m'}, B_{m'}) = \frac{\left(\sum_{k=1}^{K} P_k\right)^2 \left(\sum_{k=1}^{K}\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} B'_{mjkh} B'_{m'jkh}\right)}{\left(\sum_{k=1}^{K}\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} B'_{mjkh}\right)\left(\sum_{k=1}^{K}\sum_{j=1}^{J}\sum_{h=1}^{H_{jk}} B'_{m'jkh}\right)} \left[\hat{E}(X_m, X_{m'}) - \hat{E}(X_m)\hat{E}(X_{m'}) \right] \quad (20)$$

Where:

$$\hat{E}(X_m, X_{m'}) = \left[\frac{\sum_{k=1}^{K} P_k \left(\frac{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} X'_{mjkh} X'_{m'jkh}}{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh} B'_{m'jkh}} \right)}{\sum_{k=1}^{K} P_k} \right]$$

$$\hat{E}(X_m) = \left[\frac{\sum_{k=1}^{K} P_k \left(\frac{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh} B'_{m'jkh} X'_{mjkh}}{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh} B'_{m'jkh}} \right)}{\sum_{k=1}^{K} P_k} \right]$$

$E(X_{m'})$ same as above with $X'_{m'jkh}$ substituted for X'_{mjkh}.

Note if $\sum_{j}^{J} \sum_{h=1}^{H_{jk}} B'_{mjkh} = 0$ for some k, the terms to be multiplied by p_k are set equal 0 in (19)

If $\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh} B'_{m'jkh} = 0$ for some k then the quotient is set equal to 0 in (21) and (22)

The rational for $\text{SRSVAR}\left(R(X_m, B_m)\right)$ is as follows:

$$\text{Recalling that } R(X_m, B_m) = \sum_{k=1}^{K} p_k \left(\frac{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} X'_{mjkh}}{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh}} \right) = \sum_{k=1}^{K} p_k R^{(k)}(X_m, B_m) \quad , \quad (23)$$

We can make an estimate of $E(X_m^2)$ and $E(X_m)$ within each of the K strata. Defining $E(X_m^2)_k$ as $E(X_m^2)$ within the k^{th} stratum.

Estimate $E(X_m^2)_k$ by

$$\hat{E}(X_m^2)_k = \frac{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} X'^2_{mjkh}}{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh}} \quad . \quad (24)$$

Our estimate of $E(X_m^2)$ in the entire population is then:

$$\hat{E}(X_m^2) = \sum_{k=1}^{K} \frac{p_k}{\left(\sum_{k=1}^{K} p_k\right)} \hat{E}(X_m^2)_k \quad . \tag{25}$$

Similarly for E(X) we estimate the within stratum expectation $E(X)_k$ by

$$\hat{E}(X)_k = \left(\frac{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} X'_{mjkh}}{\sum_{j=1}^{J} \sum_{h=1}^{H_{jk}} W_{jkh} B'_{mjkh}} \right) \tag{26}$$

and for the entire population by:

$$\hat{E}(X) = \sum \frac{p_k}{\left(\sum_{k=1}^{K} p_k\right)} \hat{E}(X)_k . \tag{27}$$

Our estimate of S^2 is then

$$\hat{S}^2 = \hat{E}(X^2) - \left(\hat{E}(X) \right)^2 \tag{28}$$

We now assume that the $R^{(k)}(X_m, B_m)$'s are stratum means and that the P_k's are being used to either weight the stratum means to yield a population mean, in which case $\sum_k p_k = 1$, or to weight the stratum means by the number of population elements in the stratum in which case $p_k = N_k$, $\Sigma p_k = N$.

In addition we assume that the unweighted sum of the B'_{mjkh} is the sample size.

$$\sum_j^J \sum_k^K \sum_h^{H_{jk}} B'_{mjkh} = n.$$

Under these assumptions if $\sum_k^K p_k = 1$ then $R(X_m, B_m)$ is a mean and (eq.19) reduces to

$$\frac{\hat{S}^2}{n} = \hat{V}ar(\bar{x}) .$$

If $\sum_k^K p_k = N$ then $R(X_m, B_m)$ is a population total and (eq.19) reduces to

$$\frac{N^2\hat{S}^2}{n} = Var(X_{total})$$

In the estimation formula for $SRSCOV\left(R(X_m, B_m), R(X_{m'}, B_{m'})\right)$ the rational for estimation of $E(X_m X_{m'})$, $E(X_m)$, and $E(X_{m'})$ is similar to that used in the estimation of $E(X_m^2)$ and $E(X_m)$ in SRSVAR. However the terms B'_{mjkh} and $B'_{m'jkh}$ are introduced in (22) to assure that $E(X_m)$ and $E(X_{m'})$ are based on only the cases that are common to both subclasses.

Similarly in (20) the form $\sum_{k=1}^K \sum_{j=1}^J \sum_{h=1}^{H_{jk}} B'_{mjkh} B'_{m'jkh}$ yields $n_{1,2}$ (The number of cases) common to both subclasses. Thus the entire expression reduces to

$$SRSCOV\left(R(X_m, B_m)R(X_{m'}, B_{m'})\right) = \frac{\left(\sum_{k=1}^{K} p_k\right)^2 n_{1,2}}{n_1 n_2} \left[\hat{S}_{12}\right]$$

Where n_1 is the size of one subclass n_2 the size of the other, S_{12} the estimated covariance between X_m and $X_{m'}$ in overlapping portions of the two subclasses.

When appropriate, we define DEFF = $\frac{VAR}{SRSVAR}$.

APPENDIX D

LISTING OF 1,241 POTENTIAL PRIMARY SAMPLING UNITS WITHIN THEIR CONTROLLED-SELECTION CELLS WITH CUMULATIVE POPULATIONS IN EACH CELL

APPENDIX D. LISTING OF 1241 POTENTIAL PRIMARY SAMPLING UNITS WITHIN THEIR CONTROLLED-SELECTION CELLS WITH CUMULATIVE POPULATIONS IN EACH CELL

KEY: V1=CELL IDENTIFICATION NUMBER
V2=PSU IDENTIFICATION NUMBER
V3=PSU NAME
V4=NUMBER OF COUNTIES IN PSU (9=9 OR MORE)
V5=PSU TOTAL POPULATION IN 1973
V6=PSU TOTAL GASOLINE SALES IN 1972
V7=PSU PER CAPITA GASOLINE SALES
V8=CUMULATIVE POPULATION WITHIN CELL

SELF-REPRESENTING PSUS

V1	V2	V3	V4	V5	V6	V7
111	1301	NEW YORK CITY, NY	1	7646818	470625	61
211	2101	CHICAGO, ILL(COOK)	1	5417562	738892	136
413	7101	LOS ANGELES, CAL(L.A.)	1	6923813	1118661	161

NON-SELF-REPRESENTING PSUS

V1	V2	V3	V4	V5	V6	V7	V8
		CELL 111: NORTHEAST, CENTRAL, LOW -- 2 SELECTIONS					
111	1401	PHILADELPHIA, PA	1	1861719	157317	84	1861719
111	1402	PITTSBURGH, PA(ALLEGHENY)	1	1558190	205225	131	3419909
111	1303	BUFFALO, NY(ERIE)	1	1107311	131378	118	4527220
111	1201	NEWARK, NJ(ESSEX)	1	915431	104510	114	5442651
111	5201	BALTIMORE CITY, MD	1	877838	94516	107	6320489
111	5501	WASHINGTON, D.C.	1	733801	96272	131	7054290
111	301	BOSTON, MA(SUFFOLK)	1	713416	66737	93	7767706
111	1202	JERSEY CITY, NJ(HUDSON)	1	598164	62770	104	8365870
111	501	PROVIDENCE, RI(PROV.-14 PARTS)	1	573471	73954	128	8939341
111	1205	PATERSON, NJ(PASSAIC)	1	461380	60497	131	9400721
111	303	WORCESTER, MA(WOR. 25+2)	1	384874	48970	127	9785595
111	1306	ALBANY, NY(ALBANY)	1	288467	36251	125	10074062
111	1307	UTICA, NY(ONEIDA)	1	272337	37151	136	10346399
111	1309	POUGHKEEPSIE, NY(DUTCHESS)	1	230525	27273	118	10576924
111	104	WATERBURY, CT(11 PARTS)	1	226329	28576	126	10803253
111	305	LOWELL, MA(MIDDLE. 7 PARTS)	1	226143	29055	128	11029396
111	1411	BETHLEHEM, PA(NORTHAMPTON)	1	221029	27492	124	11250425
111	1412	JOHNSTOWN, PA(CAMBRIA)	1	188120	25722	136	11438545
111	306	NEW BEDFORD, MA(5+3 PARTS)	1	163793	20844	127	11602338
111	1310	SCHENECTADY, NY(SCHENECTADY)	1	160306	22103	137	11762644
111	1311	TROY, NY(RENSSELAER)	1	154789	20819	134	11917433
111	308	FALL RIVER, MA(5 PARTS)	1	145917	17908	122	12063350
111	110	BRISTOL, CT(3 PARTS)	1	72613	9024	124	12135963
		CELL 112: NORTHEAST, CENTRAL, MODERATE -- 1 SELECTION					
112	1304	ROCHESTER, NY(MONROE)	1	710328	99186	139	710328
112	1204	LONG BRANCH, NJ(MONMOUTH)	1	480060	73033	152	1190388
112	1305	SYRACUSE, NY(ONONDAGA)	1	470345	68617	145	1660733
112	302	SPRINGFIELD, MA(HAMPDEN 14+1)	1	455535	67648	148	2116268
112	1403	WILKES-BARRE, PA(LUZERNE)	1	344559	51330	148	2460827
112	1404	LANCASTER, PA	1	335062	50790	151	2795889

112	1405	READING, PA(BERKS)	1	304164	45657	150	3100053
112	1409	SCRANTON, PA(LACKAWANNA)	1	235037	34158	145	3335090
112	304	LAWRENCE, MA(ESSEX. 11 PARTS)	1	229050	35780	156	3564140
112	105	NORWICH, CT(NL 21-7+1)	1	224939	34814	154	3789079
112	1207	ATLANTIC CITY, NJ(ATLANTIC)	1	185560	29205	157	3974639
112	307	BROCKTON, MA(PLY. 6+1+1)	1	160829	22873	142	4135468
112	502	WARWICK, RI(KENT-4 PARTS)	1	145458	20897	143	4280926
112	1413	ALTOONA, PA(BLAIR)	1	136285	19906	146	4417211
112	402	NASHUA, NH(HILLS. 7)	1	106870	16098	150	4524081
112	310	FITCHBURG, MA(WOR.-MID.6)	1	100615	15887	157	4624696
112	1312	ELMIRA, NY(CHEMUNG)	1	100441	13922	138	4725137
112	202	LEWISTON, ME(ANDROSC.-3)	1	73120	10974	150	4798257
112	111	MERIDEN, CT	1	56686	8567	151	4854943

CELL 113: NORTHEAST, CENTRAL, AVERAGE -- 1 SELECTION

113	101	HARTFORD, CT(29-7+5)	1	649873	109417	168	649873
113	1203	NEW BRUNSWICK, NJ(MIDDLESEX)	1	594372	95045	159	1244245
113	102	NEW HAVEN, CT(13+2)	1	415372	68044	163	1659617
113	103	BRIDGEPORT, CT(FAIR. 7+2)	1	394893	67086	169	2054510
113	1206	TRENTON, NJ(MERCER)	1	315487	51442	163	2369997
113	1406	YORK, PA	1	282488	48741	172	2652485
113	1407	ERIE, PA(ERIE)	1	272506	46547	170	2924991
113	1408	ALLENTOWN, PA(LEHIGH)	1	260678	42014	161	3185669
113	201	PORTLAND, ME(13 PARTS, 2 CTY)	1	174147	28226	162	3359816
113	1208	VINELAND, NJ(CUMBERLAND)	1	129609	20873	161	3489425
113	109	NORWALK, CT(FAIRFIELD 4)	1	128260	22209	173	3617685
113	108	DANBURY, CT(FAIR. 6+LITCH 1)	1	124350	19854	159	3742035
113	1414	WILLIAMSPORT, PA(LYCOMING)	1	115181	19476	169	3857216
113	309	PITTSFIELD, MA(BERKS. 8)	1	95759	15347	160	3952975
113	1308	BINGHAMTON, NY(BROOME-TIOGA)	2	266190	42141	158	4219165

CELL 114: NORTHEAST, CENTRAL, HIGH -- 0 SELECTION

114	1302	NASSAU, NY(SMSA)	1	1416042	274012	193	1416042
114	1101	WILMINGTON, DEL(NEW CASTLE)	1	398833	69880	175	1814875
114	1410	HARRISBURG, PA(DAUPHIN)	1	226404	41597	183	2041279
114	106	STAMFORD, CT(FAIRFIELD 4)	1	202029	45709	226	2243308
114	107	NEW BRITAIN, CT(4 PARTS)	1	145036	27051	186	2388344
114	401	MANCHESTER, NH(MERR.-HILLS. 6)	1	116566	20651	177	2504910

CELL 121: NORTHEAST, SUBURBAN, LOW -- 1 SELECTION

121	1331	SUFFOLK, NY(NASSAU M)	1	1214002	164582	135	1214002
121	1233	CAMDEN, NJ(PHIL. M)	1	469943	64027	136	1683945
121	333	LYNN, MA(ESSEX. 34-11-7)	1	344948	46807	135	2028893
121	334	ROCKLAND, MA(PLY.-BOS. 12+1)	1	159479	21438	134	2188372
121	1334	SARATOGA, NY(ALBANY M)	1	140015	18449	131	2328387
121	335	ATTLEBORO, MA(BRISTOL 5+1)	1	90166	12397	137	2418553
121	531	BRISTOL, RI(BRIS-NEW 6 PARTS)	1	76183	8562	112	2494736
121	1340	MADISON, NY(SYRACUSE M)	1	65010	7090	109	2559746
121	1341	PUTNAM, NY(NYC M)	1	64859	8525	131	2624605
121	1342	MONTGOMERY, NY(ALBANY M)	1	56652	6821	120	2681257
121	337	BROOKLINE, MA(NORFOLK 1)	1	55420	5695	102	2736677
121	1333	NIAGARA-ORLEANS, NY(BUF. M)	2	275956	32523	117	3012633

CELL 122: NORTHEAST, SUBURBAN, MODERATE -- 1 SELECTION

122	331	CAMBRIDGE, MA(MIDDLESEX 34)	1	1081926	154511	142	1081926
122	1432	DELAWARE, PA(PHIL. M)	1	595605	83559	140	1677531
122	332	QUINCY, MA(NORF. 28-4)	1	542667	83902	154	2220198
122	1433	BUCKS, PA(PHIL. M)	1	443319	68780	155	2663517
122	1234	MORRIS, NJ(NEWARK M)	1	397665	61762	155	3061182
122	1434	CHESTER, PA(PHIL. M)	1	287854	43480	151	3349036

122	1336	ROCKLAND, NY(NYC M)	1	244244	36398	149	3593280
122	1436	BEAVER, PA(PITT. M)	1	210593	30425	144	3803873
122	1236	SOMERSET, NJ(NEWARK M)	1	201515	31487	156	4005388
122	1335	OSWEGO, NY(SYRACUSE M)	1	107360	14861	138	4112748
122	532	NORTH KINGSTON, RI(WASH.-4+1)	1	85619	13306	155	4198367
122	336	NORTHHAMPTON, MA(HAMPSHIRE 8)	1	83298	12122	145	4281665
122	1337	WAYNE, NY(ROCH. M)	1	82125	11929	145	4363790
122	1339	HERKIMER, NY(UTICA M)	1	68352	10669	156	4432142
122	431	SALEM, NH(PART ROCKINGHAM 9)	1	65198	10065	154	4497340
122	1343	LIVINGSTON, NY(ROCH. M)	1	57072	8179	143	4554412
122	5237	CECIL, MD(WILM. M)	1	55407	8682	156	4609819

CELL 123: NORTHEAST, SUBURBAN, AVERAGE -- 0 SELECTION

123	1332	WESTCHESTER, NY(NYC M)	1	889081	148666	167	889081
123	1232	UNION, NJ(NEWARK M)	1	538145	87531	162	1427226
123	1434	WESTMORELAND, PA(PITT. M)	1	381444	61492	161	1808670
123	1235	BURLINGTON, NJ(PHIL. M)	1	329453	54202	164	2138123
123	1237	GLOUCESTER, NJ(PHIL. M)	1	182901	30850	168	2321024
123	131	VERNON, CT(TOLLAND. 11 PARTS)	1	90296	15248	168	2411320
123	5236	HOWARD, MD(BALT. M)	1	85167	14201	166	2496487
123	1441	ADAMS, PA(YORK M)	1	60740	9758	160	2557227

CELL 124: NORTHEAST, SUBURBAN, HIGH -- 0 SELECTION

124	1231	BERGEN, NJ(NY METRO)	1	894064	159658	178	894064
124	1431	MONTGOMERY, PA(PHIL. M)	1	634952	118022	185	1529016
124	5232	BALTIMORE COUNTY, MD(BALT. M)	1	630622	115344	182	2159638
124	5233	MONTGOMERY, MD(WASH. M)	1	554364	103922	187	2714002
124	5234	ANNE ARUNDEL, MD(BALT. M)	1	327894	61055	186	3041896
124	1435	WASHINGTON, PA(PITT. M)	1	214410	38281	178	3256306
124	5235	HARFORD, MD(BALT. M)	1	129994	23017	177	3386300
124	1338	ONTARIO, NY(ROCH. M)	1	83487	15040	180	3469787
124	1438	SOMERSET, PA(JOHNSTOWN M)	1	77881	14951	191	3547668
124	1238	WARREN, NJ(ALLENTOWN M)	1	77403	15495	200	3625071
124	1239	SALEM, NJ(WILM. M)	1	61654	17361	281	3686725
124	1442	CARBON, PA(ALLENTOWN M)	1	51652	9716	188	3738377
124	5231	CHARLES-PRINCE G, MD(WASH. M)	2	744966	139162	186	4483343
124	1437	CUMBERLAND-PERRY, PA(HAR. M)	2	198918	44907	225	4682261
124	1439	SUSQUEHANNA-WAYNE, PA(BING. M)	2	68148	13331	195	4750409
124	1440	MONROE-PIKE, PA(NEPENN. M)	2	62856	21278	338	4813265

CELL 131: NORTHEAST, RURAL, LOW -- 0 SELECTION

131	153	WILLIMANTIC, CT(WIND.+2+4)	1	121012	13579	112	121012
131	1354	ST. LAWRENCE, NY(NORTH)	1	115608	10956	94	236620
131	1252	SUSSEX, NJ(NW)	1	89207	11732	131	325827
131	551	NEWPORT, RI(9 RI PARTS)	1	86594	10513	121	412421
131	1361	CATTARAUGUS, NY(WEST)	1	84784	10279	121	497205
131	1465	INDIANA, PA(CEN)	1	83460	11234	134	580665
131	1365	PLATTSBURGH, NY(CLINTON)	1	80800	9557	118	661465
131	1364	AUBURN, NY(CAYUGA)	1	78601	8167	103	740066
131	352	MARLBOROUGH, MA(MIDD. 5+1)	1	74460	9493	127	814526
131	353	GLOUCESTER, MA(ESSEX 7)	1	72598	9850	135	887124
131	354	GARDNER, MA(NW WORC. 16+1)	1	70181	9550	136	957305
131	357	CLINTON, MA(WOR. 4 + MIDD. 5)	1	60286	6210	103	1017591
131	355	PLYMOUTH, MA(PLY. 6 PARTS)	1	59508	8188	137	1077099
131	1371	COLUMBIA, NY(EAST)	1	55638	6918	124	1132737
131	1357	ONEONTA, NY(DEL-OTSEGO)	2	104238	13966	133	1236975
131	254	BRUNSWICK, ME(3 CTY. PARTS)	2	90929	11043	121	1327904
131	456	KEENE, NH(PART HILLS-CHESHIRE)	2	84572	10074	119	1412476
131	356	MILFORD, MA(S. WORC. 7)	2	63431	8030	126	1475907
131	360	AMHERST, MA(HAMP. 6+12)	2	61048	6457	105	1536955

131	154	ANSONIA, CT(NHB, FAIR. 2)	2	61029	7726	126	1597984
131	1462	BRADFORD-SULL-WY, PA(NORTH)	3	86491	11818	136	1684475
131	259	ROCKLAND, ME(LINC-KNOX-WALDO)	3	78184	10106	129	1762659
131	1366	WATKINS GLEN, NY(CEN. 3)	3	72178	9937	137	1834837
		CELL 132: NORTHEAST, RURAL, MODERATE -- 0 SELECTION					
132	1351	NEWBURGH, NY(CRANGE)	1	237696	37204	156	237696
132	1352	JAMESTOWN, NY(CHAUTAUQUA)	1	149436	21897	146	387132
132	1458	FRANKLIN, PA(SOUTH)	1	103251	16048	155	490383
132	253	AUGUSTA, ME(KENNEBEC)	1	99383	14234	143	589766
132	1363	ITHACA, NY(TOMPKINS)	1	81043	12055	148	670809
132	454	DOVER, NH(STRAFFORD CTY.)	1	77204	10746	139	748013
132	1466	ARMSTRONG, PA(CEN)	1	75687	11401	150	823700
132	351	TAUNTON, MA(4 PARIS)	1	65110	9291	142	888810
132	358	GREENFIELD, MA(FRANKLIN)	1	61177	8697	142	949987
132	363	NORTH ADAMS, MA(BERKS. 32-8)	1	53229	8143	152	1003216
132	1355	WATERTOWN, NY(JEFF.-LEWIS)	2	116039	17205	148	1119255
132	5251	CUMBERLAND, MD(WEST 2)	2	107052	16825	157	1226307
132	1356	GLEN FALLS, NY(WAR.-WASH.)	2	106169	15922	149	1332476
132	255	HOULTON, ME(AROOSTOOK)	2	96169	14969	155	1428645
132	1359	CORTLAND-CHENANGO, NY(CEN)	2	94362	13806	146	1523007
132	1360	ALLEGANY-WYOMING, NY(WEST)	2	87411	13306	152	1610418
132	1362	ESSEX-FRANKLIN, NY(NORTH)	2	80437	11686	145	1690855
132	5256	CALVERT-ST. MARYS, MD(SC 2)	2	72965	10307	141	1763820
132	256	RUMFORD, ME(OX-FRANK.)	2	68093	10407	152	1831913
132	1367	GREENE-SCHOHARIE, NY(CEN)	2	65866	10271	155	1897779
132	1369	FULTON-HAMILTON, NY	2	60695	9315	153	1958474
132	1457	HUNT-MIFF-JUN, PA(CEN-3)	3	103542	15288	147	2062016
		CELL 133: NORTHEAST, RURAL, AVERAGE -- 1 SELECTION					
133	1251	OCEAN, NJ(EAST)	1	260346	41376	158	260346
133	1452	SCHUYLKILL, PA(EAST)	1	160977	27945	173	421323
133	1353	ULSTER, NY(SOUTH)	1	151070	25150	166	572393
133	1455	MERCER, PA(WEST)	1	128506	21666	168	700899
133	1456	NEW CASTLE, PA(LAWRENCE)	1	107626	17256	160	808525
133	651	BURLINGTON, VT(CRIT.)	1	104603	18188	173	913128
133	1459	LEBANON, PA	1	103197	17613	170	1016325
133	1358	STEUBEN, NY(WEST)	1	100675	15953	158	1117000
133	251	BIDDEFORD, ME(YORK)-2)	1	99874	17265	172	1216874
133	1460	NORTHUMBERLAND, PA(CEN)	1	99718	17376	174	1316592
133	1151	DOVER, DEL(KENT)	1	88900	15172	170	1405492
133	152	TORRINGTON, CT(LITCH. 26-6+1)	1	87530	14084	160	1493022
133	1464	CRAWFORD, PA(WEST)	1	84407	14159	167	1577429
133	5255	CARROLL, MD(BALT. M)	1	76646	12892	168	1654075
133	1368	BATAVIA, NY(GENESEE)	1	60469	9700	160	1714544
133	257	ELLSWORTH, ME(HAN.-WASH)	2	69198	11081	160	1783742
133	1470	SNYDER-UNION, PA(CEN)	2	60204	10348	171	1843946
133	258	SKOWHEGAN, ME(SOM-PISC)	2	58609	9783	166	1902555
133	1471	TIOGA-POTTER, PA(NORTH)	2	58402	9491	162	1960957
133	1473	WARREN-FOREST, PA(NORTH)	2	52964	8621	162	2013921
133	1461	MCKEAN-CAM-ELK, PA(NORTH)	3	97155	15834	162	2111076
133	656	ST. ALBANS, VT(NW 4)	4	72674	11596	159	2183750
		CELL 134: NORTHEAST, RURAL, HIGH -- 1 SELECTION					
134	1454	BUTLER, PA(WEST)	1	135395	26041	192	135395
134	252	BANGOR, ME(PENOBSCOT)	1	130923	24440	186	266318
134	5252	HAGERSTOWN, MD(WASHINGTON)	1	106224	20532	193	372542
134	5254	FREDERICK, MD(WEST)	1	91876	22384	243	464418
134	453	PORTSMOUTH, NH(ROCK CTY. 37-9)	1	90153	20241	224	554571
134	1152	GEORGETOWN, DEL(SUSSEX)	1	84849	15032	177	639420

134	151	MIDDLETOWN, CT(MIDDL. 15-6+2)	1	77128	14040	182	716548
134	1467	CLEARFIELD, PA(CEN)	1	76438	21608	282	792986
134	1253	HUNTERDON, NJ(WEST)	1	76073	13732	180	869059
134	1254	CAPE MAY, NJ(SOUTH)	1	66811	13530	202	935870
134	1469	VENANGO, PA(WEST)	1	63081	12155	192	998951
134	1370	SULLIVAN, NY(SOUTH)	1	58247	11548	198	1057198
134	1451	FAYETTE-GREENE, PA(SW)	2	194815	34715	178	1252013
134	1453	STATE COLLEGE, PA(CEN.-2)	2	142458	26789	188	1394471
134	359	HYANNIS, MA(BARN.-DUKES.-NANT)	2	124504	31817	255	1518975
134	451	CONCORD, NH(MERR.-BELKNAP)	2	108094	19875	183	1627069
134	452	CLAREMONT, NH(SULL.-GRAFTON)	2	90135	17633	195	1717204
134	1463	JEFFERSON-CLARION, PA(CEN)	2	85169	21314	250	1802373
134	652	RUTLAND, VT(WEST-2)	2	80384	14316	178	1882757
134	1468	COLUMBIA-MONTOUR, PA(CEN)	2	74719	13444	179	1957476
134	655	WOODSTOCK, VT(EAST-2)	2	64949	12551	193	2022425
134	654	BRATTLEBORO, VT(SOUTH-2)	2	64661	14931	230	2087086
134	455	BERLIN, NH(COOS-CARROLL)	2	55239	11637	210	2142325
134	5258	CAMBRIDGE, MD(E 2)	2	54408	10014	184	2196733
134	1472	BEDFORD-FULTON, PA(SOUTH)	2	54380	24326	447	2251113
134	5253	SALISBURY, MD(SE 3)	3	101898	23339	229	2353011
134	653	MONTPELIER, VT(NE-3)	3	78452	15558	198	2431463
134	5257	CAROLINE-KENT-QUEEN, MD(E 3)	3	56619	10402	183	2488082

CELL 211: MIDWEST, CENTRAL, LOW -- 0 SELECTION

211	2501	MILWAUKEE, WI(MILWAUKEE)	1	1039962	143350	137	1039962
211	2506	APPLETON, WI(OUTAGAMIE)	1	121298	14973	123	1161260

CELL 212: MIDWEST, CENTRAL, MODERATE -- 1 SELECTION

212	2301	DETROIT, MI(WAYNE)	1	2585560	373429	144	2585560
212	2401	CLEVELAND, OH(CUYAHOGA)	1	1647066	259913	152	4232626
212	3402	ST. LOUIS, MO(CITY)	1	558006	82158	147	4790632
212	2406	TOLEDO, OH(LUCAS)	1	486269	75666	155	5276901
212	2407	CANTON, OH(STARK)	1	382834	58092	151	5659735
212	2408	YOUNGSTOWN, OH(MAHONING)	1	303266	45752	150	5963001
212	2409	LORAIN, OH(LORAIN)	1	263138	40103	152	6226139
212	2410	WARREN, OH(TRUMBULL)	1	240100	35891	149	6466239
212	2306	SAGINAW, MI(SAGINAW)	1	225789	35091	155	6692028
212	2503	RACINE, WI(RACINE)	1	173210	26207	151	6865238
212	2504	GREEN BAY, WI(BROWN)	1	167379	25158	150	7032617
212	2415	STEUBENVILLE, OH(JEFFERSON)	1	95480	13441	140	7128097
212	3404	ST. JOSEPH, MO(BUCHANAN)	1	86896	13356	153	7214993
212	2508	LA CROSSE, WI(LA CROSSE)	1	82725	12693	153	7297718

CELL 213: MIDWEST, CENTRAL, AVERAGE -- 1 SELECTION

213	3301	MINNEAPOLIS, MN(HENNEPIN)	1	932680	160669	172	932680
213	2402	CINCINNATI, OH(HAMILTON)	1	909193	151333	166	1841873
213	2403	COLUMBUS, OH(FRANKLIN)	1	857675	143899	167	2699548
213	2404	DAYTON, OH(MONTGOMERY)	1	597434	98792	165	3296982
213	2202	GARY, IND(LAKE)	1	547656	90976	166	3844638
213	3302	ST. PAUL, MN(RAMSAY)	1	466810	80070	171	4311448
213	2203	FORT WAYNE, IND(ALLEN)	1	287998	49584	172	4599446
213	2304	LANSING, MI(INGHAM)	1	266809	43343	162	4866255
213	2305	ANN ARBOR, MI(WASHTENAW)	1	246800	40989	166	5113055
213	2204	SOUTH BEND, IND(ST. JOSEPH)	1	244117	41015	168	5357172
213	2411	HAMILTON, OH(BUTLER)	1	237347	38075	160	5594519
213	2307	KALAMAZOO, MI(KALAMAZOO)	1	200879	34005	169	5795398
213	2205	EVANSVILLE, IND(VANDERBURGH)	1	166499	28733	172	5961897
213	2105	CHAMPAIGN, ILL(CHAMPAIGN)	1	163805	27456	167	6125702
213	2412	SPRINGFIELD, OH(CLARK)	1	157521	27030	171	6283223
213	2308	MUSKEGON, MI(MUSKEGON)	1	156988	25512	162	6440211

213	2310	JACKSON, MI(JACKSON)	1	144922	24314	167	6585133
213	2206	ANDERSON, IND(MADISON)	1	140751	24090	171	6725884
213	2505	OSHKOSH, WI(WINNEBAGO)	1	131842	20956	158	6857726
213	2413	MANSFIELD, OH(RICHLAND)	1	131176	22696	173	6988902
213	2507	KENOSHA, WI(KENOSHA)	1	120840	19293	159	7109742
213	2311	BAY CITY, MI(BAY)	1	119038	19299	162	7228780
213	3304	ST. CLOUD, MN(STEARNS)	1	99564	17423	174	7328344
213	3106	DUBUQUE, IO(DUBUQUE)	1	93036	15603	167	7421380
213	3406	COLUMBIA, MO(BOONE)	1	84957	14631	172	7506337
213	3403	SPRINGFIELD, MO(GREENE-CHRIS)	2	183949	31878	173	7690286
213	3303	DULUTH, MN(NE 3)	3	235572	41163	174	7925858

CELL 214: MIDWEST, CENTRAL, HIGH -- 1 SELECTION

214	2201	INDIANAPOLIS, IND(MARION)	1	792143	154866	195	792143
214	3401	KANSAS CITY, MO(JACKSON)	1	649132	123876	190	1441275
214	2405	AKRON, OH(SUMMIT)	1	546111	96640	176	1987386
214	2302	FLINT, MI(GENESEE)	1	449348	80927	180	2436734
214	2303	GRAND RAPIDS, MI(KENT)	1	416551	79185	190	2853285
214	2502	MADISON, WI(DANE)	1	301311	55699	184	3154596
214	2102	ROCKFORD, ILL(WINNEBAGO)	1	244717	44094	180	3399313
214	2103	PEORIA, ILL(PEORIA)	1	198666	36759	185	3597979
214	2106	SPRINGFIELD, ILL(SANGAMON)	1	167738	33066	197	3765717
214	2104	ROCK ISLAND, ILL(NW)	1	164652	30613	185	3930369
214	3102	CEDAR RAPIDS, IO(LINN)	1	164275	32721	199	4094644
214	3103	DAVENPORT, IO(SCOTT)	1	146352	36569	249	4240996
214	2309	BATTLE CREEK, MI(CALHOUN)	1	141011	25450	180	4382007
214	2207	MUNCIE, IND(DELAWARE)	1	132190	23261	175	4514197
214	3104	WATERLOO, IO(BLACK HAWK)	1	131959	25504	193	4646156
214	2107	DECATUR, ILL(MACON)	1	124742	23206	186	4770898
214	2108	BLOOMINGTON, ILL(MCLEAN)	1	114842	28099	244	4885740
214	2208	TERRE HAUTE, IND(VIGO)	1	113861	22172	194	4999601
214	2209	LAFAYETTE, IND(TIPPECANOE)	1	111768	19899	178	5111369
214	2414	LIMA, OH(ALLEN)	1	109629	23106	210	5220998
214	3105	SIOUX CITY, IO(WOODBURY)	1	104363	18801	180	5325361
214	3305	ROCHESTER, MN(OLMSTED)	1	86994	15442	177	5412355
214	3101	DES MOINES, IO(POLK-WARREN)	2	325220	72591	223	5737575

CELL 221: MIDWEST, SUBURBAN, LOW -- 0 SELECTION

221	2334	ST CLAIR, MI(DET. M)	1	127140	16041	126	127140
221	2433	GREENE, OH(DAYTON M)	1	127126	17329	136	254266
221	2335	MONROE, MI(TOL. M)	1	124442	17145	137	378708
221	2533	CALUMET-OZAUKEE, WI(MIL-APP M)	1	88716	8310	93	467424
221	2532	WASHINGTON, WI(MILW. M)	1	71044	9537	134	538468
221	2338	SHIAWASSEE, MI(FLINT M)	1	67567	7859	116	606035
221	2444	GEAUGA, OH(CLEVE. M)	1	65801	8329	126	671836
221	2341	LAPEER, MI(DET. M)	1	58609	8077	137	730445
221	2133	BELLEVILLE, ILL(STL. M3)	3	330018	41709	126	1060463

CELL 222: MIDWEST, SUBURBAN, MODERATE -- 0 SELECTION

222	2531	WAUKESHA, WI(MILW. M)	1	245156	38410	156	245156
222	3331	ANOKA, MN(MINN. M)	1	173538	24136	139	418694
222	2439	CLERMONT, OH(CINCI M)	1	102335	14586	142	521029
222	2442	FAIRFIELD, OH(COL. M)	1	79077	12362	156	600106
222	2339	LIVINGSTON, MI(DET. M)	1	71067	10688	150	671173
222	2240	HAMILTON, IND(IND. M)	1	62624	8764	139	733797
222	2445	LAWRENCE, OH(HUNT. M)	1	59974	8368	139	793771
222	2333	OCEANA-OTTAWA, MI(GR-MUS M)	2	155596	21793	140	949367
222	2435	CHAMPAIGN-MIAMI, OH(D-SM)	2	118773	18567	156	1068140
222	2336	BARRY-EATON, MI(LAN.-BC M)	2	114519	17208	150	1182659
222	2337	CLINTON-IONIA, MI(LAN. M)	2	97560	13654	139	1280219

222	2235	GIB-POSEY-WAR, IND(EVANS. M)	3	86358	12241	141	1366577
222	2234	ADAMS-DEKALB-WELLS, IND(FW M)	3	83579	12952	154	1450156

CELL 223: MIDWEST, SUBURBAN, AVERAGE -- 1 SELECTION

223	2331	OAKLAND, MI(DET. M)	1	949817	158252	166	949817
223	2332	MACOMB, MI(DET. M)	1	656125	104279	158	1605942
223	2136	MADISON, ILL(ST LOUIS M)	1	251732	41486	164	1857674
223	3332	DAKOTA, MN(MINN. M)	1	160625	27184	169	2018299
223	3433	JEFFERSON, MO(S.L. M)	1	118257	19133	161	2136556
223	2340	VAN BUREN, MI(KAL. M)	1	60229	10381	172	2196785
223	3333	CHISAGO-WASHINGTON, MN(MIN M)	2	116288	19802	170	2313073
223	2232	JOHNSON-MORGAN, IND(IND. M)	2	113516	18567	163	2426589
223	2437	BELMONT-CARROLL, OH(WH-CAN M)	2	104863	17413	166	2531452
223	2237	HANCOCK-SHELBY, IND(IND. M)	2	77798	12859	165	2609250
223	2436	DEL-MAD-PICK, OH(COL. M)	3	120515	19447	161	2729765
223	2241	DEAR-OHIO-RIPLEY, IND(CIN. M)	3	56597	9321	164	2786362

CELL 224: MIDWEST, SUBURBAN, HIGH -- 1 SELECTION

224	3431	ST. LOUIS, MO(COUNTY)	1	965157	172958	179	965157
224	2131	DU PAGE, ILL(CHICAGO M)	1	535356	96402	180	1500513
224	2132	LAKE, ILL(CHICAGO M)	1	388351	75359	194	1888864
224	2134	WILL, ILL(CHICAGO M)	1	278060	49429	177	2166924
224	2135	KANE, ILL(CHICAGO M)	1	261916	48211	184	2428840
224	2431	LAKE, OH(CLEVE. M)	1	202174	35644	176	2631014
224	2432	PORTAGE, OH(AKRON M)	1	131022	23916	182	2762036
224	3434	ST. CHARLES, MO(S.L. M)	1	106626	28790	270	2868662
224	2440	WOOD, OH(TOL. M)	1	97118	23385	240	2965780
224	2441	MEDINA, OH(CLEVE M)	1	91330	20406	223	3057110
224	3131	POTTAWATTAMIE, IO(OMAHA M)	1	89241	20992	235	3146351
224	2236	CLARK, IND(LOUISVILLE M)	1	80563	17089	212	3226914
224	3436	FRANKLIN, MO(S.L. M)	1	61588	16177	262	3288502
224	2446	MARIETTA, OH(WASHINGTON)	1	58228	12678	217	3346730
224	2239	FLOYD, IND(LOUISVILLE M)	1	56928	10848	190	3403658
224	2139	HENRY, ILL(ROCK ISLAND M)	1	53580	13306	248	3457238
224	2138	BOONE-MCHENRY, ILL(CHI-ROCK M)	2	147646	26505	179	3604884
224	2231	MARSHALL-PORTER, IND(G-SJ M)	2	129884	28875	222	3734768
224	2434	PREBLE-WARREN, OH(CIN-D M)	2	122561	23986	195	3857329
224	2233	BOONE-HENDRICKS, IND(IND. M)	2	90517	27879	307	3947846
224	2443	FULTON-OTTAWA, OH(TOL. M)	2	74650	13291	178	4022496
224	3335	CARVER-SCOTT, MN(MINN. M)	2	67636	14908	218	4090132
224	2534	POLK-ST. CROIX, WI(MINN M)	2	66245	14540	219	4156377
224	3435	CASS-RAY, MO(KC M)	2	66031	11870	179	4222408
224	3336	MOORHEAD, MN(FARGO M)	2	55945	12097	216	4278353
224	2535	SUPERIOR, WI(DULUTH M)	2	55808	10485	187	4334161
224	3432	AND-CLAY-PLATTE, MO(KC-SJ M)	3	180644	37812	209	4514805
224	2137	TAZE-WOOD-MEN, ILL(PE-SPR M)	3	162818	31270	192	4677623
224	2438	AUG-PUT-VAN, OH(LIMA M)	3	102362	19802	193	4779985
224	3334	BEN-SHER-WRIGHT, MN(MIN-SC M)	3	90104	20780	230	4870089
224	2238	CLAY-SULL-VERM, IND(TERRE H.M)	3	61511	12003	195	4931600

CELL 231: MIDWEST, RURAL, LOW -- 0 SELECTION

231	2553	WAUSAU, WI(MARATHON)	1	101477	12259	120	101477
231	2554	SHEBOYGAN, WI(EAST)	1	98689	11385	115	200166
231	2561	BEAVER DAM, WI(DODGE)	1	71035	7102	99	271201
231	2353	CASS-ST. JOSEPH, MI(S)	2	94964	12730	134	366165
231	2162	QUINCY, ILL(WC 2)	2	77614	9136	117	443779
231	2463	ATHENS, OH(SE 2)	2	76054	10270	135	519833
231	2568	CRAWFORD-GRANT, WI(SW)	2	64908	8003	123	584741
231	2570	MARINETTE-OCONTO, WI(NE)	2	63316	7602	120	648057
231	2475	COSHOCTON-HOLMES, OH(EC)	2	58857	6822	115	706914

231	2552	MANITOWOC, WI(NE 3)	3	124460	15938	128	831374
231	3456	JEFFERSON CITY, MO(CEN 3)	3	72777	9956	136	904151
231	2567	GREEN-IOWA-LAFAYETTE, WI(SW)	3	65551	8351	127	969702
231	2474	HOCKING-MORGAN-PERRY, OH(SC)	3	62303	8351	134	1032005
231	2264	CONNORSVILLE, IND(EAST 4)	4	71929	8509	118	1103934

CELL 232: MIDWEST, RURAL, MODERATE -- 1 SELECTION

232	2456	WOOSTER, OH(WAYNE)	1	90639	13721	151	90639
232	2556	FOND DU LAC, WI(EC)	1	85960	12520	145	176599
232	2460	PORTSMOUTH, OH(SCIOTO)	1	78379	11286	143	254978
232	2462	ERIE, OH(NORTH)	1	77248	12078	156	332226
232	2153	LEE-WHITESIDE, ILL(NORTH)	2	99981	13950	139	432207
232	2253	BLOOMINGTON, IND(MON-BROWN)	2	99404	14470	145	531611
232	2457	DARKE-MERCER, OH(WEST)	2	87462	12619	144	619073
232	2355	GRATIOT-MONTCALM, MI(CEN 2)	2	82405	12688	153	701478
232	2259	LOGANSPORT, IND(CASS-MIAMI)	2	80308	12407	154	781786
232	2560	SHAWANO-WAUPACA, WI(EC)	2	73744	10711	145	855530
232	2465	BUCYRUS, OH(NC)	2	73507	10267	139	929037
232	2572	CHIPPEWA-RUSK, WI(WC)	2	64193	9627	149	993230
232	3360	WINONA, MN(SE 2)	2	63577	9739	153	1056807
232	2478	HARDIN-UNION, OH(CEN)	2	57608	7987	138	1114415
232	2352	HURON-SANILAC-TUSCOLA, MI(EC)	3	125048	19331	154	1239463
232	2557	RICHLAND-SAUK-VERNON, WI(SW)	3	81923	12858	156	1321386
232	2461	ADAMS-BROWN-HIGHLAND, OH(S)	3	80118	11269	140	1401504
232	2256	DAVIESS-KNOX-PIKE, IND(S)	3	79533	12466	156	1481037
232	2171	W. FRANKFORT, ILL(SOUTH 3)	3	65245	10129	155	1546282
232	3367	OWATONNA, MN(SOUTH 3)	3	58731	8890	151	1605013
232	3155	ALL-CLAY-FAY-WINN, IO(NE)	4	85378	12779	149	1690391
232	2269	CRAWFORD-HAR-OR-WASH, IND(S)	4	67100	9667	144	1757491
232	3475	BAR-CED-DADE-LAW, MO(SW 4)	4	55040	8143	147	1812531

CELL 233: MIDWEST, RURAL, AVERAGE -- 0 SELECTION

233	2451	NEWARK, OH(LICKING)	1	111203	19240	173	111203
233	2452	COLUMBIANA, OH(EAST)	1	110843	17849	161	222046
233	2155	DANVILLE, ILL(VERMILION)	1	97338	16868	173	319384
233	2154	KANKAKEE, ILL(EAST)	1	97058	16590	170	416442
233	2354	LENAWEE, MI(SOUTH)	1	84187	13994	166	500629
233	2562	EAU CLAIRE, WI(WC)	1	72315	12654	174	572944
233	2165	DE KALB, ILL(NORTH)	1	70432	12227	173	643376
233	2566	WALWORTH, WI(SE)	1	66290	11463	172	709666
233	2466	MARION, OH(MARION)	1	66058	11531	174	775724
233	2573	JEFFERSON, WI(SOUTH)	1	61871	10626	171	837595
233	2473	SENECA, OH	1	60884	10506	172	898479
233	2454	NEW PHILADELPHIA, OH(E 2)	2	96314	16109	167	994793
233	2455	HURON-ASHLAND, OH(N)	2	95942	16241	169	1090735
233	2160	CARBONDALE, ILL(SW 2)	2	86040	14283	166	1176775
233	3351	MANKATO, MN(SOUTH 2)	2	81277	12966	159	1258052
233	2458	CHILLICOTHE, OH(SOUTH 2)	2	81272	13043	160	1339324
233	2356	BRANCH-HILLSDALE, MI(S)	2	78941	12710	161	1418265
233	2358	MARQUETTE, MI(UP 2)	2	77419	13023	168	1495684
233	2464	LOGAN-SHELBY, OH(WC)	2	75212	13147	174	1570896
233	2565	PORTAGE-WAUSHARA, WI(CEN 2)	2	66550	11510	172	1637446
233	3357	AUSTIN, MN(SE 2)	2	65912	11296	171	1703358
233	2468	KNOX-MORROW, OH(CEN)	2	65822	10931	166	1769180
233	2370	MECOSTA-NEWAYGO, MI(CEN 2)	2	62549	10229	163	1831729
233	3468	KENNETT, MO(SE 2)	2	61730	10480	169	1893459
233	2176	FULTON-MASON, ILL(WC)	2	59331	10335	174	1952790
233	3370	RED WING, MN(SE 2)	2	55822	8846	158	2008612
233	3455	MILLER-PULASKI, MO(CEN 2)	2	55512	9361	168	2064124
233	3175	FORT MADISON, IO(SE 2)	2	51384	8668	168	2115508

233 3151	CLINTON, IO(EAST 3)	3	98747	16164	163	2214255
233 2167	MACOMB, ILL(WC 3)	3	70819	11404	161	2285074
233 2266	DUBOIS-PERRY-SPENCER, IND(S)	3	68444	11406	166	2353518
233 2467	CAMBRIDGE, OH(SE 3)	3	65525	11363	173	2419043
233 2469	GALLIA-JACKSON-VINTON, OH(S)	3	65484	10433	159	2484527
233 2267	CARROLL-CLINTON-TIPTON, IND	3	65065	10870	167	2549592
233 3162	INDEPENDENCE, IO(EAST 3)	3	63976	10856	169	2613568
233 2274	MADISON, IND(SOUTHEAST 3)	3	51854	8393	161	2665422
233 2163	JACKSONVILLE, ILL(WC 4)	4	75750	13054	172	2741172
233 3356	FAIRMONT, MN(SW 4)	4	67287	11358	168	2808459
233 2569	MERRILL, WI(NORTH 4)	4	65486	11386	173	2873945
233 3467	NEVADA, MO(WEST 4)	4	63281	10161	160	2937226
233 3474	DOU-HOW-OZ-IAN, MO(S 4)	4	59939	9848	164	2997165
233 3169	CHARLES CITY, IO(N 4)	4	59055	9983	169	3056220
233 3364	WORTHINGTON, MN(SW 4)	4	58543	10098	172	3114763
233 2369	HOUGHTON, MI(UP 4)	4	57459	9703	168	3172222
233 3362	MONTEVIDEO, MN(WC 5)	5	61306	10658	173	3233528
233 2158	CLAY + 5, ILL(SE 6)	6	86579	13939	160	3320107
233 2172	HARRISBURG, ILL(SE 6)	6	64670	10563	163	3384777
	CELL 234: MIDWEST, RURAL, HIGH --	2	SELECTIONS			
234 2351	BENTON HARBOR, MI(BERRIEN)	1	167685	36117	215	167685
234 2551	JANESVILLE, WI(ROCK)	1	132936	23820	179	300621
234 2251	ELKHART, IND(ELKHART)	1	131933	27193	206	432554
234 2151	LA SALLE, ILL(NC)	1	110635	27214	245	543189
234 2252	MICHIGAN CITY, IND(LA PORTE)	1	106330	24143	227	649519
234 2453	ASHTABULA, OH(NE)	1	100078	17883	178	749597
234 2255	KOKOMO, IND(HOWARD)	1	85988	16201	188	835585
234 2254	MARION, IND(GRANT)	1	84347	15199	180	919932
234 3451	JOPLIN, MO(JASPER)	1	82547	15084	182	1002479
234 2459	ZANESVILLE, OH(MUSKINGUM)	1	80589	15831	196	1083068
234 2258	RICHMOND, IND(WAYNE)	1	78242	20076	256	1161310
234 2359	ALLEGAN, MI(SW)	1	69745	13934	199	1231055
234 2360	MIDLAND, MI(MIDLAND)	1	65687	13362	203	1296742
234 2472	SANDUSKY COUNTY, OH(N)	1	62838	14575	231	1359580
234 2471	FINDLAY, OH(HANCOCK)	1	62596	11012	175	1422176
234 2272	HENRY, IND(E CEN)	1	53304	9883	185	1475480
234 3154	AMES, IO(CEN 2)	2	92472	18560	200	1567952
234 3153	IOWA CITY, IO(EC 2)	2	91148	22019	241	1659100
234 2257	COLUMBUS, IND(BART-DEC)	2	82361	22621	274	1741461
234 2263	KOSCIUSKO-WHITLEY, IND(N)	2	75561	16375	216	1817022
234 3354	FERGUS FALLS, MN(WEST 2)	2	73534	14685	199	1890556
234 2262	HUNTINGTON-WABASH, IND(N)	2	70692	13812	195	1961248
234 2166	JO DAVIESS-STEPHENSON, ILL(N)	2	70286	12957	184	2031534
234 2362	MT PLEASANT, MI(CEN 2)	2	67639	13802	204	2099173
234 2168	CHRISTIAN-MONT, ILL(CEN 2)	2	67265	13172	195	2166438
234 2564	BARRON-DUNN, WI(WC)	2	67209	13599	202	2233647
234 3463	CAPE-GIRADEAU-PERRY, MO(SE 2)	2	66018	13823	209	2299665
234 3358	FARIBAULT, MN(SC 2)	2	65828	12872	195	2365493
234 3465	JOHNSON-LAFAYETTE, MO(W 2)	2	63798	11297	177	2429291
234 3161	BURLINGTON, IO(SE 2)	2	63291	12234	193	2492582
234 2470	HENRY-WILLIAMS, OH(NW)	2	62747	12736	202	2555329
234 2365	ESCANABA, MI(UP 2)	2	62678	11940	190	2618007
234 3167	MARSHALLTOWN, IO(CEN 2)	2	62573	12962	207	2680580
234 2174	CARROLL-OGLE, ILL(NORTH)	2	61660	11181	181	2742240
234 3365	ALBERT LEA, MN(SOUTH 2)	2	59037	10492	177	2801277
234 2476	CLINTON-FAYETTE, OH(S)	2	58339	13349	228	2859616
234 2178	GRUNDY-KENDALL, ILL(NC)	2	57571	13214	229	2917187
234 2477	DEFIANCE-PAULDING, OH(NW)	2	57201	10744	187	2974388
234 3369	ITASCA-KOOCHICHING, MN(N)	2	54849	13157	239	3029237

234	2273	JACKSON-JENNINGS, IND(SOUTH)	2	53998	10653	197	3083235
234	3476	FULTON, MO(EC 2)	2	53475	14997	280	3136710
234	2555	WISCONSIN RAPIDS, WI(CEN 3)	3	97569	20218	207	3234279
234	2156	FORD-IROQOUIS-LIVINGSTON, ILL	3	90503	21618	238	3324782
234	2157	CHARLESTON, ILL(EC 3)	3	89180	17308	194	3413962
234	2558	CLARK-JACKSON-MONROE, WI(WC)	3	79952	17339	216	3493914
234	3352	BRAINERD, MN(EC 3)	3	79729	19771	247	3573643
234	2260	GREENE-LAW-MAR, IND(SOUTH)	3	79071	14413	182	3652714
234	2261	NOBLE-LAGRANGE-STEUBEN, IND	3	76428	21274	278	3729142
234	2164	BOND-FAY-MARION, ILL(SC 3)	3	75504	16477	218	3804646
234	3453	MISS-NMADRID-SCOTT, MO(SE 3)	3	74885	15056	201	3879531
234	3353	WILLMAR, MN(CEN 3)	3	72481	14502	200	3952012
234	3157	IOWA-JASPER-POWESHIEK,IO(EC 3)	3	71231	20931	293	4023243
234	2265	PORTLAND, IND(EAST 3)	3	69498	13044	187	4092741
234	3460	SGEN-SFRAN-WASH, MO(E 3)	3	69389	12868	185	4162130
234	3355	MCLEOD-NICOLLET-SIBLEY,MN(SC3)	3	69015	13758	199	4231145
234	2563	PORTAGE, WI(CEN 3)	3	68856	13880	201	4300001
234	3158	MUSCATINE, IO(EAST 3)	3	68266	13918	203	4368267
234	2169	MT. VERNON, ILL(SOUTH 3)	3	67944	12288	180	4436211
234	3159	OTTUMWA, IO(SE 3)	3	65905	11999	182	4502116
234	3160	LYON-PLYMOUTH-SIOUX, IO(NW)	3	65795	13551	205	4567911
234	2366	TRAVERSE CITY, MI(NW 3)	3	65276	13509	206	4633187
234	2170	DE WITT-LOGAN-PIATT, ILL(CEN)	3	64698	13524	209	4697885
234	3361	MORRISON-TODD-WADENA, MN(C 3)	3	63316	16137	254	4761201
234	3166	OSKALOOSA, IO(CEN 3)	3	62877	11595	184	4824078
234	2175	EFF-MOULTRIE-SHELBY, ILL(CEN3)	3	61856	21779	352	4885934
234	2270	POUNT-MONT-WARREN, IND(WEST)	3	61378	11409	185	4947312
234	2367	DICKINSON+2, MI(UP 3)	3	58376	12107	207	5005688
234	2271	OWEN-PARKE-PUTNAM, IND(W)	3	56079	9932	177	5061767
234	3172	BREMER-BUTLER-GRUNDY, IO(NC)	3	55152	10742	194	5116919
234	3371	MARSHALL, MN(SW 2)	3	53043	9457	178	5169962
234	3174	FRANKLIN-HARDIN-WRIGHT, IO(NC)	3	52411	10953	208	5222373
234	2371	LUDINGTON, MI(WC 3)	3	52363	10217	195	5274736
234	3176	DALLAS-GREENE-GUTHRIE, IO(C 4)	3	51996	10881	209	5326732
234	2275	FULTON-PULASKI-STARKE, IND(N)	3	50402	11084	219	5377134
234	3372	CROOKSTON, MN(NW 3)	3	50243	10292	204	5427377
234	3177	AUDUBON, IO(WC 3)	3	49358	13965	282	5476735
234	2152	GALESBURG, ILL(WC 4)	4	107924	19352	183	5584659
234	3152	FORT DODGE, IO(NC 4)	4	92166	20989	227	5676825
234	2159	MARION, ILL(SW 4)	4	88286	18110	205	5765111
234	2161	CAL-GRE-JEF-MAC, ILL(WC 4)	4	87077	15705	180	5852188
234	3155	MASON CITY, IC(N 4)	4	85685	16389	191	5937873
234	3452	CASSVILLE, MO(SW 4)	4	82911	17121	206	6020784
234	2559	BUFF-PEP-PIE-TREMP, WI(W 4)	4	74875	13780	184	6095659
234	3461	SEDALIA, MO(WC 4)	4	69748	12914	185	6165407
234	2364	ARENAC+3, MI(EC 4)	4	69524	17462	251	6234931
234	3359	BIMIDJI, MN(NC 4)	4	68083	16147	237	6303014
234	2268	BEN-JAS-NEW-WHITE, IND(NW)	4	67830	16120	237	6370844
234	3462	ROLLA, MO(CEN 4)	4	66869	15741	235	6437713
234	3363	ISANTI-KAN-MIL-PINE, MN(EC 4)	4	65986	14086	213	6503699
234	3464	CHAR-LIN-MAC-RAN, MO(NC 4)	4	64415	11516	178	6568114
234	3165	DENISON, IO(WEST 4)	4	63284	13296	210	6631398
234	3163	STORM LAKE, IC(NW 4)	4	62954	14667	232	6694352
234	3164	EM-PAL-POC-KOS, IO(N)	4	62783	11955	190	6757135
234	2173	BUREAU-MAR-PUT-STARK, ILL(NC)	4	62720	12591	200	6819855
234	3466	MARSHALL, MO(CEN 4)	4	61948	14566	235	6881803
234	3470	BUT-CAR-ORE-RIP, MO(S 4)	4	61481	11077	180	6943284
234	2368	CHIPPEWA+3, MI(E. UP 4)	4	60979	11941	195	7004263
234	3472	SHA-TEX-WEB-WEI, MO(S 4)	4	60259	10581	175	7064522
234	3471	LIN-MONT-PIKE-WAR, MO(E 4)	4	59459	14572	245	7123981

234	3170	SPENCER, IO(NW 4)	4	57859	13296	229	7181840
234	2177	CLARK-CRAW-CUM-JAS, ILL(EC 4)	4	56207	11515	204	7238047
234	3173	RED OAK, IO(SW 4)	4	54557	12434	227	7292604
234	3473	MAR-MON-RAL-SHEL, MO(NE 4)	4	53285	12143	227	7345889
234	2357	PETOSKEY, MI(NORTH 5)	5	84072	24496	291	7429961
234	3459	CAM-DAL-HIC-LAC-POLK, MO(C5)	5	70143	15486	220	7500104
234	2571	RHINELANDER, WI(NORTH 5)	5	66830	16192	242	7566934
234	2363	ALPENA, MI(NE 5)	5	66345	11843	178	7633279
234	3366	ALEXANDRIA, MN(WC 5)	5	60848	11818	194	7694127
234	2574	ASHLAND, WI(NORTH 5)	5	57969	11256	194	7752096
234	2361	CADILLAC, MI(CEN 6)	6	73883	19504	263	7825979
234	3457	BOL-IR-MAD-REY-STO-WA, MO(SE6)	6	71796	12590	175	7897775
234	3168	AP-CL-DE-LU-MO-WA, IO(S 6)	6	61343	12710	207	7959118
234	3469	MARYVILLE, MO(NW 6)	6	61295	15016	244	8020413
234	3171	CRESTON, IO(SW 5)	6	56811	11805	207	8077224
234	3368	THIEF RIVER FALLS, MN(NW 6)	6	56406	15949	282	8133630
234	3458	CHILLICOTHE, MO(NW 7)	7	71707	13264	184	8205337
234	3454	KIRKSVILLE, MO(NE 8)	8	72278	15708	217	8277615

CELL 311: SOUTH, CENTRAL, LOW -- 0 SELECTION

311	4501	NEW ORLEANS, LA(ORLEANS)	1	573479	63353	110	573479
311	4102	MOBILE, AL(MOBILE)	1	325303	42423	130	898782
311	4503	SHREVEPORT, LA(CADDO)	1	236826	32344	136	1135608
311	4103	HUNTSVILLE, AL(MADISON)	1	186799	20310	108	1322407
311	4105	TUSCALOOSA, AL(TUSCALOOSA)	1	121826	16609	136	1444233
311	4107	GADSEN, AL(ETOWAH)	1	95429	11562	121	1539662
311	4204	FAYETTEVILLE, ARK(WASHINGTON)	1	85434	10929	127	1625096
311	4108	FLORENCE, AL(LAUDERDALE)	1	70787	8053	113	1695883
311	5406	CLARKSVILLE, TN(MONTGOMERY)	1	69287	9450	136	1765170
311	4001	NORFOLK, VA(NORF-VIRG. B.)	2	482677	59410	123	2247847
311	4003	NEWPORT NEWS-HAMPTON, VA	2	265946	34466	129	2513793
311	5405	KINGSPORT, TN(HAWK-SULL)	2	166043	22624	136	2679836
311	4505	ALEXANDRIA, LA(GRANT-RAP)	2	137207	17693	128	2817043
311	4004	PORTSMOUTH, VA(PO-CH-SU)	3	253680	31354	123	3070723

CELL 312: SOUTH, CENTRAL, MODERATE -- 1 SELECTION

312	4101	BIRMINGHAM, AL(JEFFERSON)	1	649619	92193	141	649619
312	4303	ST. PETERSBURG, FLA(PINELLAS)	1	617329	86952	140	1266948
312	4502	BATON ROUGE, LA(E BATON ROUGE)	1	289734	43627	150	1556682
312	4802	CHARLESTON, SC(CHARLESTON)	1	252268	38982	154	1808950
312	4704	WINSTON-SALEM, NC(FORSYTH)	1	224118	32297	144	2033068
312	4705	FAYETTEVILLE, NC(CUMBERLAND)	1	216227	31421	145	2249295
312	4504	LAKE CHARLES, LA(CALCASIEU)	1	149258	22269	149	2398553
312	4506	MONROE, LA(OUACHITA)	1	121817	18875	154	2520370
312	4106	ANNISTON, AL(CALHOUN)	1	104203	14968	143	2624573
312	4709	BURLINGTON, NC(ALAMANCE)	1	99860	15574	155	2724433
312	4203	PINE BLUFF, ARK(JEFFERSON)	1	84836	12361	145	2809269
312	5401	MEMPHIS, TN(SHEL-TIP)	2	766631	117241	152	3575900
312	4308	PENSACOLA, FLA(ESC-SR)	2	258677	36745	142	3834577
312	4404	AUGUSTA, GA(COL-RICH)	2	175880	27195	154	4010457
312	5602	HUNTINGTON, WV(CAB-WAYNE)	2	145069	20520	141	4155526
312	5103	OWENSBORO, KY(DAV-HEND)	2	118119	18061	152	4273645
312	5604	PARKERSBURG, WV(WIRT-WOOD)	2	91500	13397	146	4365145
312	4602	BILOXI, MS(HAN-HAR-STONE)	3	172630	24947	144	4537775

CELL 313: SOUTH, CENTRAL, AVERAGE -- 2 SELECTIONS

313	4301	MIAMI, FLA(DADE)	1	1369917	217312	158	1369917
313	4302	FT. LAUDERDALE, FLA(BROWARD)	1	756139	123320	163	2126056
313	4304	TAMPA, FLA(HILLSBOROUGH)	1	546963	88421	161	2673019
313	4306	W PALM BEACH, FLA(PALM BEACH)	1	412074	67212	163	3085093

313	4801	GREENVILLE, SC(GREENVILLE)	1	258772	44781	173	3343865
313	4309	LAKELAND, FLA(POLK)	1	254574	44376	174	3598439
313	4703	RALEIGH, NC(WAKE)	1	253459	40088	158	3851898
313	4601	JACKSON, MS(RANKIN)	1	223105	37887	169	4075003
313	4312	SARASOTA, FLA(SARASOTA)	1	150129	26238	174	4225132
313	4313	FORT MYERS, FLA(LEE)	1	136319	23749	174	4361451
313	4002	RICHMOND, VA(+HENRICO)	2	402366	69257	172	4763817
313	4403	COLUMBUS, GA(CHAT-MUSC)	2	176066	30479	173	4939883
313	4706	ASHEVILLE, NC(BUN-MAD)	2	164732	28640	173	5104615
313	4314	TALLAHASSEE, FLA(LEON-WAK)	2	128413	21906	170	5233028
313	4708	WILMINGTON, NC(BRUN-NH)	2	123470	20144	163	5356498
313	4202	FORT SMITH, ARK(CRAW-SEB)	2	111627	18919	169	5468125
313	4406	ALBANY, GA(DOUGH-LEE)	2	103969	17775	170	5572094
313	5101	LOUISVILLE, KY(BUL-JEF-OLD)	3	748335	119660	159	6320429
313	4006	LYNCHBURG, VA(SMSA)	4	139962	24302	173	6460391
313	4005	ROANOKE, VA(2 CI, 3 CO)	5	214274	34849	162	6674665
313	4007	PETERSBURG, VA(SMSA)	5	126255	21305	168	6800920
		CELL 314: SOUTH, CENTRAL, HIGH --	1	SELECTION			
314	4401	ATLANTA, GA(FULTON)	1	594562	122801	206	594562
314	4305	JACKSONVILLE, FLA(DUVAL)	1	521953	98451	188	1116515
314	5402	NASHVILLE, TN(DAVIDSON)	1	449058	85872	191	1565573
314	4307	ORLANDO, FLA(ORANGE)	1	394548	84891	215	1960121
314	4701	CHARLOTTE, NC(MECKLENBURG)	1	374546	66509	177	2334667
314	4702	GREENSBORO, NC(GUILFORD)	1	300097	58547	195	2634764
314	5404	KNOXVILLE, TN(KNOX)	1	289334	53208	183	2924098
314	4803	COLUMBIA, SC(RICHLAND)	1	241798	42756	176	3165896
314	4310	MELBOURNE, FLA(BREVARD)	1	230205	43897	190	3396101
314	4311	DAYTONA BEACH, FLA(VOLUSIA)	1	193754	39108	201	3589855
314	5102	LEXINGTON, KY(FAYETTE)	1	184603	36499	197	3774458
314	4104	MONTGOMERY, AL(MONTGOMERY)	1	179082	33848	189	3953540
314	4405	MACON, GA(BIBB)	1	143753	35355	245	4097293
314	4707	DURHAM, NC(DURHAM)	1	139982	24787	177	4237275
314	4315	GAINESVILLE, FLA(ALACHUA)	1	119941	29133	242	4357216
314	4507	LAFAYETTE, LA(LAFAYETTE)	1	119337	22169	185	4476553
314	4201	LITTLE ROCK, ARK(PUL-SAL)	2	349687	62342	178	4826240
314	5601	CHARLESTON, WV(KAN-PUT)	2	255520	47143	184	5081760
314	5603	WHEELING,WV(MAR-OHIO)	2	101922	19506	191	5183682
314	5403	CHATTANOOGA, TN(HA-MA-SEQ)	3	292896	56731	193	5476578
314	4402	SAVANNAH, GA(BRY-CH-EFF)	3	201447	39882	197	5678025
314	4205	TEXARCANA, ARK(LAF-LR-MIL)	3	55235	11191	202	5733260
		CELL 321: SOUTH, SUBURBAN, LOW --	0	SELECTION			
321	4731	GASTON, NC(CHAR. M)	1	155421	20137	129	155421
321	4333	PASCO, FLA(TAMPA M)	1	111381	12779	114	266802
321	4732	DAVIDSON, NC(WS M)	1	99336	13400	134	366138
321	5133	CAMPBELL, KY(CINCI. M)	1	87163	10005	114	453301
321	4733	RANDOLPH, NC(GREENSBORO M)	1	80458	10813	134	533759
321	5135	CHRISTIAN, KY(CLARKSVILLE M)	1	67064	8578	127	600823
321	4835	PICKENS, SC(GREEN. M)	1	65467	7976	121	666290
321	4734	ORANGE, NC(DURHAM M)	1	64998	8000	123	731288
321	4735	UNION, NC(CHAR. M)	1	58235	5746	98	789523
321	4136	MARSHALL, AL(HUNTS. M)	1	56788	5032	88	846311
321	4032	ALEX-ARL, VA(WASH. M)	2	269909	34039	126	1116220
321	4833	BERKELEY-DORCHESTER, SC(CH. M)	2	100023	10176	101	1216243
321	4534	PLAQ-ST. BERN, LA(N.O. M)	2	82521	10107	122	1298764
321	4131	BARBOUR-RUSSELL, AL(COL. M)	2	69382	8366	120	1368146
321	4631	DESOTO-TATE, MS(MEMP. M)	2	66569	7548	113	1434715
321	4133	AUTAUGA-ELMORE, AL(MONT. M)	2	65400	7690	117	1500115
321	4736	STOKES-YADKIN, NC(WS M)	2	52598	6151	116	1552713

321	4533	ASC-LIV-WBR, LA(B.R. M)	3	96491	12723	131	1649204
321	4436	CATOOSA-DADE-WALKER, GA(CH. M)	3	95740	12720	132	1744944
321	4036	WILLIAMSBURG, VA(NN-HA M 4)	4	81513	11235	137	1826457

CELL 322: SOUTH, SUBURBAN, MODERATE -- 0 SELECTION

322	4531	JEFFERSON, LA(N. O. M)	1	381530	59061	154	381530
322	4832	LEXINGTON, SC(COLUMBIA M)	1	106832	15729	147	488362
322	4834	AIKEN, SC(AUGUSTA M)	1	93291	12986	139	581653
322	5435	BLOUNT, TN(KNOX. M)	1	66464	10045	151	648117
322	4135	WALKER, AL(BIRM. M)	1	61929	9728	157	710046
322	5134	BOYD-GREENUP, KY(HUNT. M)	2	85667	12183	142	795713
322	5631	BROOKE-HANCOCK, WV(STEUB. M)	2	70065	9808	139	865778
322	4437	CHER-DOUG-PAUL, GA(ATL. M)	3	94632	13543	143	960410
322	4438	HOU-JONES-TWIGGS, GA(MAC M)	3	89635	12632	140	1050045

CELL 323: SOUTH, SUBURBAN, AVERAGE -- 0 SELECTION

323	4831	SPARTANBURG, SC(GREEN. M)	1	185063	30875	166	185063
323	4033	PRINCE WILLIAM CO, VA(WASH. M)	1	137031	23862	174	322094
323	4034	CHESTERFIELD CO., VA(RICH M)	1	90653	15351	169	412747
323	4632	RANKIN, MS(JACKSON M)	1	51864	8296	159	464611
323	4331	OSEOLA-SEMINOLE, FLA(ORL. M)	2	154950	25264	163	619561
323	4435	FORSYTH-GWINNETT, GA(ATL. M)	2	115959	20103	173	735520
323	5431	SUMNER-WILSON, TN(NASH. M)	2	106435	18610	174	841955
323	5432	RUTH-WILL, TN(NASH. M)	2	105444	18332	173	947399
323	4132	ST. CLAIR-SHELBY, AL(BIRM. M)	2	75744	12347	163	1023143
323	5433	CHEAT-DICK-ROB, TN(NASH. M)	3	71027	11708	164	1094170
323	4434	BU-HE-NE-RO-WA, GA(ATL. M)	5	120417	20406	169	1214587

CELL 324: SOUTH, SUBURBAN, HIGH -- 1 SELECTION

324	4431	DE KALB, GA(ATL. M)	1	463944	83814	180	463944
324	4432	COBB, GA(ATLANTA M)	1	221279	49710	224	685223
324	4535	ST. TAMMANY, LA(N.O. M)	1	70587	13937	197	755810
324	4134	BALDWIN, AL(MOBILE M)	1	64182	14378	224	819992
324	4231	BENTON, ARK(FAY. M)	1	57519	10653	185	877511
324	4232	CRITTENDEN, ARK(MEMPHIS M)	1	50559	17902	354	928070
324	5131	BOONE-KENTON, KY(CINCI. M)	2	167587	39981	238	1095657
324	4433	CLAYTON-FAYETTE, GA(ATL. M)	2	137194	28687	209	1232851
324	4532	BOSSIER-WEBSTER, LA(SHREV. M)	2	106669	22133	207	1339520
324	5434	ANDERSON-UNION, TN(KNOX. M)	2	70872	12705	179	1410392
324	4035	BRISTOL, VA(+WASH-SCOTT)	3	82177	15709	191	1492569
324	4031	FAIRFAX-LOUDON, VA(WASH. M)	4	579440	124639	215	2072009
324	4332	BAK-CLAY-NAS-ST. J, FLA(JAC M)	4	112353	28602	254	2184362
324	4037	CC-GO-HA-POW, VA(RICH M)	4	70308	23061	327	2254670
324	5132	BO-CL-JE-SC-WO, KY(LEX. M)	5	97824	17737	181	2352494

CELL 331: SOUTH, RURAL, LOW -- 2 SELECTIONS

331	4652	PASCAGOULA, MS(JACKSON)	1	103933	11304	108	103933
331	4857	SUMTER, SC(CEN 1)	1	82850	11329	136	186783
331	4773	ROCKINGHAM, NC(NORTH)	1	75366	9529	126	262149
331	5656	CLARKSBURG, WV(HARRISON)	1	75286	10381	137	337435
331	4661	GREENVILLE, MS(WASHINGTON)	1	71158	8372	117	408593
331	5166	PIKE, KY(EAST 1)	1	65922	7797	118	474515
331	4161	TALLADEGA, AL(EC)	1	65042	8586	132	539557
331	4165	AUBURN, AL(LFE)	1	62632	7692	122	602189
331	5651	BECKLEY, WV(SC 2)	2	126980	16922	133	729169
331	4754	LENOIR, NC(WC 2)	2	122606	15265	124	851775
331	4759	JACKSONVILLE, NC(SE 2)	2	112329	14360	127	964104
331	4051	DANVILLE, VA(SOUTH 2)	2	106512	12730	119	1070616
331	4453	ROME, GA(NW 2)	2	97130	13051	134	1167746
331	5654	MORGANTOWN, WV(N 2)	2	93880	11810	125	1261626

331	4152	COLBERT-LIMESTONE, AL(FL-H M)	2	93168	12376	132	1354794
331	4552	NEW IBERIA, LA(SC 2)	2	92361	10353	112	1447155
331	4155	CULLMAN, AL(NC 2)	2	86284	10661	123	1533439
331	4656	CLEVELAND, MS(WC 2)	2	86273	7972	92	1619712
331	4766	CLINTON, NC(EC 2)	2	84808	8501	100	1704520
331	4658	COLUMBUS, MS(EC 2)	2	84569	10672	126	1789089
331	4253	JONESBORO, ARK(NE 2)	2	84374	10590	125	1873463
331	5655	FAIRMONT, WV(N 2)	2	78661	10574	134	1952124
331	4771	BLADEN-COLUMBUS, NC(SC 2)	2	76331	10005	131	2028455
331	5460	GREENVILLE, TN(EAST 2)	2	76133	9490	124	2104588
331	4859	CHESTER-LANCASTER, SC(N 2)	2	75188	7757	103	2179776
331	4058	SMYTH-TAZEWELL, VA(SW 2)	2	74310	8281	111	2254086
331	4860	DARLINGTON, SC(NC 2)	2	71524	9617	134	2325610
331	4256	ELDORADO, ARK(SOUTH 2)	2	70199	9086	129	2395809
331	5463	CLEVELAND, TN(SE 2)	2	68139	9233	135	2463948
331	4563	DE RIDDER, LA(WC 2)	2	66625	7229	108	2530573
331	5659	WILLIAMSON, WV(SW 2)	2	65672	7309	111	2596245
331	5167	HARLAN, KY(SE 2)	2	64957	7654	117	2661202
331	4068	FLOYD-MONTGOMERY, VA(SW 2)	2	62619	8372	133	2723821
331	4863	CHEST-MARL, SC(NC 2)	2	61932	6948	112	2785753
331	4168	COFFEE-GENEVA, AL(SE 2)	2	57922	7175	123	2843675
331	4160	OZARK, AL(SE 2)	2	57836	7514	129	2901511
331	5471	ELIZABETHTON, TN(NE 2)	2	57055	5806	101	2958566
331	4266	HELENA, ARK(EAST 2)	2	55426	5311	95	3013992
331	4567	ABBEVILLE, LA(SW 2)	2	52634	6421	121	3066626
331	4568	ASSUMPTION-IBERVILLE, LA(SC 2)	2	50475	4188	82	3117101
331	4755	STATESVILLE, NC(WC 3)	3	116950	14547	124	3234051
331	4756	ALL-SUR-WILKES, NC(NW 3)	3	114449	14178	123	3348500
331	4151	FORT PAYNE, AL(NE 3)	3	104529	12210	116	3453029
331	4451	CARR-HABAL-POLK, GA(WEST 3)	3	98905	12084	122	3551934
331	4553	VILLE PLATTE, LA(CEN 3)	3	90332	8390	92	3642266
331	4153	SELMA, AL(CEN 3)	3	85958	10452	121	3728224
331	4765	LAURINBURG, NC(SC 3)	3	85614	10635	124	3813838
331	4767	ROXBORO, NC(NORTH 3)	3	80023	8959	111	3893861
331	4768	HENDERSONVILLE, NC(SW 3)	3	78421	10265	130	3972282
331	4056	BUCH-DICK-RUSS, VA(SW 3)	3	76420	7894	103	4048702
331	4558	CHARLES-JAMES-JOHN, LA(SE 3)	3	75477	8445	111	4124179
331	4158	RUSSELLVILLE, AL(NW 3)	3	72374	6559	90	4196553
331	4660	CHIC-CLAY-NON, MS(EC 3)	3	71153	9061	127	4267706
331	4662	GREENWOOD, MS(WC 3)	3	69440	8144	117	4337146
331	4561	NATCHITOCHES, LA(WC 3)	3	68606	7549	110	4405752
331	4663	LAMAR-MAR-PEARL R, MS(S 3)	3	68201	7811	114	4473953
331	4562	RUSTON, LA(NORTH 3)	3	67855	8037	118	4541808
331	5163	SOMERSET, KY(SC 3)	3	67123	8884	132	4608931
331	4665	OXFORD, MS(NORTH 3)	3	66714	9054	135	4675645
331	4162	CHAM-CLEB-RAND, AL(E 3)	3	65877	7522	114	4741522
331	5466	BOLIVAR, TN(SW 3)	3	65444	8405	128	4806966
331	4666	CRARKSDALE, MS(NW 3)	3	65166	7617	116	4872132
331	4669	BROCKHAVEN, MS(SC 3)	3	64203	7874	122	4936335
331	4067	BEDFORD-FRANKLIN, VA(WC 3)	3	63303	6383	100	4999638
331	4670	YAZOO CITY, MS(CEN 3)	3	63098	7736	122	5062736
331	5468	LAWRENCEBURG, TN(SC 3)	3	62479	8321	133	5125215
331	4164	BULLOCK-MACON-PIKE, AL(EC 3)	3	62314	6470	103	5187529
331	4865	EDGE-NEW-SAL, SC(WC 3)	3	60358	8086	133	5247887
331	4779	ASHE-AVERY-WATAUGA, NC(NW 3)	3	59710	7534	126	5307597
331	4673	MCCOMB, MS(SOUTH 3)	3	58803	7350	124	5366400
331	4166	CLAY-COOSA-TALLAPOOSA, AL(EC3)	3	58767	5414	92	5425167
331	4169	FAYETTE-LAMAR-MARION, AL(NW 3)	3	57566	5215	90	5482733
331	4170	BIBB-CHILTON-PERRY, AL(CEN 3)	3	55579	6641	119	5538312
331	4569	DES-RED-SAB, LA(WC 3)	3	50449	6355	125	5588761

331	4651	LAUREL, MS(EC 4)	4	107245	13202	123	5696006
331	4654	CARTHAGE, MS(CEN 4)	4	93361	10349	110	5789367
331	4154	CHOC-CLAR-MAR-WASH, AL(SW 4)	4	83416	10758	128	5872783
331	4557	BASTROP, LA(NE 4)	4	76240	8705	114	5949023
331	4772	WINDSOR, NC(NE 4)	4	76218	9043	118	6025241
331	4659	BEN-MAR-TIP-UN, MS(N 4)	4	71816	8434	117	6097057
331	5461	CAM-FEN-MOR-SCO, TN(NC 4)	4	71469	9166	128	6168526
331	5160	HAZARD, KY(SE 4)	4	70549	6574	93	6239075
331	4561	CAL-FRA-MAD-RICH, LA(NE 4)	4	70274	9517	135	6309349
331	4462	DUBLIN, GA(CEN 4)	4	68336	8484	124	6377685
331	4664	VICKSBURG, MS(WC 4)	4	67191	8264	122	6444876
331	4667	NATCHEZ, MS(SW 4)	4	65142	6467	99	6510018
331	4163	EUTAW, AL(WEST 4)	4	63651	6558	103	6573669
331	4066	AC-LA-NORTHA-NORTHU, VA(E 4)	4	63297	8288	130	6636966
331	4671	COU-JD-SIM-SMITH, MS(SC 4)	4	62506	6428	102	6699472
331	4470	HAR-MER-TAL-UP, GA(W 4)	4	62072	7116	114	6761544
331	4672	LOUISVILLE, MS(EC 4)	4	60808	7265	119	6822352
331	4565	EF-PC-SH-WF, LA(EC 4)	4	59414	5921	99	6881766
331	5174	BARDSTOWN, KY(CEN 4)	4	56031	7000	124	6937797
331	5662	ELKINS, WV(EC 4)	4	55746	7587	136	6993543
331	5665	WESTON, WV(CEN 4)	4	53479	6068	113	7047022
331	5153	PAINTSVILLE, KY(EAST 5)	5	91082	9207	101	7138104
331	4463	BA-HA-RA-ST-WH, GA(NE 5)	5	67512	8566	126	7205616
331	5164	LEITCHFIELD, KY(WC 5)	5	66600	6965	104	7272216
331	5165	CA-EL-LE-MO-RO, KY(NE 5)	5	66366	7474	112	7338582
331	4257	CAMDEN, ARK(SOUTH 5)	5	65562	8292	126	7404144
331	4263	LO-MON-PO-SCO-YE, ARK(W5)	5	63342	8735	137	7467486
331	5663	DO-PL-RI-TY-WE, WV(NW 5)	5	54780	7190	131	7522266
331	4259	HARRISON, ARK(NORTH 6)	6	67351	8385	124	7589617
331	4062	FARMVILLE, VA(CEN 6)	6	63847	7944	124	7653464
331	4474	BAINBRIDGE, GA(SW 6)	6	59717	6727	112	7713181
331	4478	AMERICUS, GA(WC 6)	6	58373	7932	135	7771554
331	4479	AT-BE-CL-CO-EC-LA, GA(S 6)	6	55654	5501	98	7827208
331	5170	MOUNT STERLING, KY(EC 7)	7	62133	8394	135	7889341
331	4477	DA-FA-GI-LV-PI-TO-UN, GA(N 7)	7	59089	7206	121	7948430

CELL 332: SOUTH, RURAL, MODERATE -- 1 SELECTION

332	4355	CRESTVIEW, FLA(OKALOOSA)	1	95518	13812	144	95518
332	4854	ROCK HILL, SC(YORK)	1	91676	13150	143	187194
332	4762	LUMBERTON, NC(ROBESON)	1	88729	13242	149	275923
332	4763	GOLDSBORO, NC(WAYNE)	1	88441	13303	150	364364
332	4555	OPELOUSAS, LA(ST. LANDRY)	1	81007	12105	149	445371
332	4556	HOUMA, LA(TERRE BONNE)	1	80458	11353	141	525829
332	4774	GREENVILLE, NC(PITT)	1	75333	10744	142	601162
332	4564	FRANKLIN, LA(ST. MARY)	1	61747	9257	149	662909
332	4267	HOT SPRINGS, ARK(GARLAND)	1	59936	9121	152	722845
332	4868	LAURENS, SC(WEST)	1	49835	7007	140	772680
332	4751	KANNAPOLIS, NC(CAB-ROW)	2	169652	25156	148	942332
332	4752	CATAWBA-LINCOLN, NC(WC 2)	2	132419	18730	141	1074751
332	4753	SHELBY, NC(SW 2)	2	124260	17342	139	1199011
332	5652	MCDOWELL-MERCER, WV(S 2)	2	116760	17792	152	1315771
332	4758	ROCKY MOUNT, NC(EC 2)	2	114373	16908	147	1430144
332	4551	TANG-WASH, LA(EAST 2)	2	111039	15479	139	1541183
332	5453	JOHNSON CITY, TN(NE 2)	2	93997	13569	144	1635180
332	4356	PANAMA CITY, FLA(NW 2)	2	90738	13811	152	1725918
332	4861	GAFFNEY, SC(NORTH 2)	2	68731	9601	139	1794649
332	4777	KINSTON, NC(EAST 2)	2	67113	9751	145	1861762
332	4862	BEAUFORT, SC(S 2)	2	65717	9730	148	1927479
332	4867	CAMDEN, SC(NC 2)	2	55711	8421	151	1983190
332	4760	NEW BERN, NC(EAST 3)	3	110524	16275	147	2093714

332	5653	BOONE-LINCOLN-LOGAN, WV(SW 3)	3	94210	13004	138	2187924
332	4054	MARTINSVILLE, VA(SOUTH 3)	3	87832	12948	147	2275756
332	5455	ATHENS, TN(SE 3)	3	87485	13251	151	2363241
332	4764	ALBEMARLE, NC(SC 3)	3	87439	12654	144	2450680
332	4657	TUPELO, MS(NE 3)	3	84994	11757	138	2535674
332	4455	LA GRANGE, GA(WEST 3)	3	84800	12223	144	2620474
332	4858	GREENWOOD, SC(W 3)	3	80153	11081	138	2700627
332	4157	BREWTON, AL(SOUTH 3)	3	72900	11091	152	2773527
332	5657	MARTINSBURG, WV(NE 3)	3	71024	10980	154	2844551
332	4159	ANDALUSIA, AL(SOUTH 3)	3	70136	10114	144	2914687
332	4260	SEARCY, ARK(NC 3)	3	66620	10378	155	2981307
332	4065	LEE-WISE-NORTON, VA(SW 3)	3	64525	8979	139	3045832
332	5660	JAC-MAS-ROA, WV(WEST 3)	3	60854	8720	143	3106686
332	4781	MCD-MITCH-YAN, NC(W 3)	3	58691	8407	143	3165377
332	5173	GREENVILLE, KY(WEST 3)	3	58628	8717	148	3224005
332	4072	RADFORD, VA(SW 3)	3	58236	9183	157	3282241
332	5472	BROWNSVILLE, TN(WEST 3)	3	56781	8144	143	3339022
332	4052	CHARLOTTESVILLE, VA(NC 4)	4	105022	16309	155	3444044
332	5454	SHELBYVILLE, TN(SC 4)	4	91024	13426	147	3535068
332	5456	MORRISTOWN, TN(NE 4)	4	84214	12968	153	3619282
332	5658	LEWISBURG, WV(SE 4)	4	65941	10326	156	3685223
332	5168	BENTON-MURRAY, KY(SW 4)	4	64446	9729	150	3749669
332	4264	CLAY-LAW-RAN-SHAR, ARK(NE 4)	4	61459	9664	157	3811128
332	4363	QUINCY, FLA(NW 4)	4	57980	8384	144	3869108
332	5661	BRA-CLAY-NIC-WEB, WV(CEN 4)	4	56568	8455	149	3925676
332	4566	CAT-CON-LAS-TEN, LA(EC 4)	4	56164	7759	138	3981840
332	5664	GRA-HAM-HAR-MIN, WV(NE 4)	4	54236	7918	145	4036076
332	4251	ASH-CHI-DE-DR-LIN, ARK(SE 5)	5	88768	13501	152	4124844
332	4776	WASHINGTON, NC(EAST 5)	5	67828	9743	143	4192672
332	4464	MILLEDGEVILLE, GA(CEN 5)	5	66929	9619	143	4259601
332	5464	PARIS, TN(NW 5)	5	65534	10307	157	4325135
332	4466	LOUISVILLE, GA(EC 5)	5	64724	8995	138	4389859
332	4069	FRANKLIN, VA(SE 5)	5	61657	9483	153	4451516
332	5171	MAYFIELD, KY(SW 5)	5	61642	9554	154	4513158
332	4780	ELIZABETH CITY, NC(NE 5)	5	60994	9049	148	4574152
332	5172	COLUMBIA, KY(SC 5)	5	59069	8160	138	4633221
332	4252	BATESVILLE, ARK(NORTH 6)	6	90310	13792	152	4723531
332	5457	MCMINNVILLE, TN(CEN 6)	6	81736	11516	140	4805267
332	4467	MO-TA-TE-TO-TR-WH, GA(SC 6)	6	64088	9452	147	4869355
332	5451	COOKEVILLE, TN(NC 8)	8	104140	15412	147	4973495
		CEL 333: SOUTH, RURAL, AVERAGE --	0	SELECTION			
333	4354	MANATEE, FLA(WC 1)	1	112804	18725	165	112804
333	4156	DECATUR, AL(MORGAN)	1	80833	14084	174	193637
333	4559	THIBODAUX, LA(LAFOURCHE)	1	71636	12524	174	265273
333	4852	CONWAY, SC(NE 2)	2	115850	18869	162	381123
333	4757	SMITHFIELD, NC(CEN 2)	2	114491	18331	160	495614
333	4454	GAINESVILLE, GA(NORTH 2)	2	86861	14250	164	582475
333	4554	CROWLEY, LA(SC 2)	2	82157	13529	164	664632
333	5459	DYER-GIBSON, TN(NW 2)	2	79980	13189	164	744612
333	5162	PADUCAH, KY(SW 2)	2	67529	10981	162	812141
333	5470	SEVIERVILLE, TN(EAST 2)	2	59010	9590	162	871151
333	4761	SANFORD, NC(CEN 3)	3	103642	17084	164	974793
333	4653	MERIDAN, MS(EC 3)	3	100971	17460	172	1075764
333	4452	ATHENS, GA(NORTH 3)	3	98875	17240	174	1174639
333	4770	HENDERSON, NC(NC 3)	3	76908	13216	171	1251547
333	4459	BRUNSWICK, GA(SE 3)	3	72276	11733	162	1323823
333	5462	UNION CITY, TN(NW 3)	3	70304	11300	160	1394127
333	5465	FAYETTEVILLE, TN(SC 3)	3	65895	10889	165	1460022
333	5467	COLUMBIA, TN(MC 3)	3	64923	10579	162	1524945

333 4668	CORINTH, MS(NE 3)	3	64772	10270	158	1589717
333 4655	HATTIESBURG, MS(SE 4)	4	92933	16126	173	1682650
333 4255	STUTTGART, ARK(EC 4)	4	78065	12357	158	1760715
333 4469	EL-FR-HA-MAD, GA(NE 4)	4	62378	10769	172	1823093
333 4674	WINONA, MS(CEN 4)	4	58495	9709	165	1881588
333 5452	CROSSVILLE, TN(EC 5)	5	95655	15367	160	1977243
333 5152	MADISONVILLE, KY(WEST 5)	5	92587	15251	164	2069830
333 4855	AL-BAM-BAR-CO-HA, SC(S 5)	5	88425	14055	158	2158255
333 5156	DANVILLE, KY(CEN 5)	5	79433	12712	160	2237688
333 5157	GLASGOW, KY(SC 5)	5	75162	13064	173	2312850
333 4782	CH-CL-GR-MA-SW, NC(SW 5)	5	54160	8727	161	2367010
333 4480	CR-MAC-MAR-PE-SC-TA, GA(C 6)	6	52394	8497	162	2419404
333 4476	WASHINGTON, GA(EC 7)	7	59381	9724	163	2478785

CELL 334: SOUTH, RURAL, HIGH -- 0 SELECTION

334 4853	FLORENCE, SC(EC 1)	1	93736	18187	194	93736
334 4357	LAKE, FLA(NC 1)	1	81814	14378	175	175550
334 4167	DOTHAN, AL(HOUSTON)	1	62586	11409	182	238136
334 4262	BLYTHEVILLE, ARK(MISSISSIPPI)	1	61151	11829	193	299287
334 4364	KEY WEST, FLA(MONROE)	1	50749	9391	185	350036
334 4851	ANDERSON, SC(NW 2)	2	154122	27807	180	504158
334 4856	ORANGEBURG, SC(CEN 2)	2	83264	15464	185	587422
334 5155	ELIZABETHTOWN, KY(WC 2)	2	80975	20274	250	668397
334 5458	JACKSON, TN(WEST 2)	2	80186	15033	187	748583
334 4769	HALIFAX-NORTHAM, NC(NE 2)	2	77773	16616	213	826356
334 4457	DALTON, GA(NORTH 2)	2	74518	16447	220	900874
334 4458	VALDOSTA, GA(SOUTH 2)	2	74510	17660	237	975384
334 5158	BOWLING GREEN, KY(SC 2)	2	73651	14729	199	1049035
334 4775	WILSON, NC(EC 2)	2	73177	13822	188	1122212
334 4060	HARRISONBURG, VA(N 2)	2	67268	12783	190	1189480
334 4778	HAYWOOD-JACKSON, NC(SW 2)	2	66056	12895	195	1255536
334 4471	BARTOW-GORDON, GA(NW 2)	2	62234	16653	267	1317770
334 4864	CLAR-WILLIAMS, SC(EC 2)	2	60957	13701	224	1378727
334 4866	DILLON-MARION, SC(NE 2)	2	60334	12106	200	1439061
334 4351	FORT PIERCE, FLA(EC 3)	3	141206	29996	212	1580267
334 4352	OCALA-PALATKA, FLA(NC 3)	3	133773	30300	226	1714040
334 5154	PINEVILLE, KY(SE 3)	3	84116	15259	181	1798156
334 4254	FORREST CITY, ARK(E 3)	3	78161	14624	187	1876317
334 4360	NAPLES, FLA(SW 3)	3	70305	15297	217	1946622
334 4061	S. BOSTON, VA(SOUTH 2)	3	66219	12708	191	2012841
334 4472	MOULTRIE, GA(SOUTH 3)	3	61498	11369	184	2074339
334 4265	RUSSELLVILLE, ARK(NC 3)	3	59566	10471	175	2133905
334 4071	FRONT ROYAL, VA(N 3)	3	58558	13770	235	2192463
334 4268	MALVERN, ARK(SC 3)	3	56180	10436	185	2248643
334 4073	WINCHESTER, VA(NORTH 3)	3	54696	11383	208	2303339
334 4359	INVERNESS, FLA(WC 4)	4	92363	24455	264	2395702
334 4053	STAUNTON, VA(WC 4)	4	89848	15951	177	2485550
334 4456	THOMASVILLE, GA(SOUTH 4)	4	77484	16881	217	2563034
334 4358	MARIANNA, FLA(NW 4)	4	75897	13807	181	2638931
334 4460	GRIFFIN, GA(CEN 4)	4	72257	13728	189	2711188
334 5159	LONDON, KY(SC 4)	4	71968	13813	191	2783156
334 5161	RICHMOND, KY(EC 4)	4	69728	13390	192	2852884
334 4258	CONWAY, ARK(NC 4)	4	68729	12046	175	2921613
334 4473	TIFTON, GA(SC 4)	4	60148	17491	290	2981761
334 5469	LEXINGTON, TN(WC 4)	4	59841	10376	181	3041602
334 4475	STATESBORO, GA(EAST 4)	4	59653	10498	175	3101255
334 5175	RUSSELLVILLE, KY(SC 4)	4	56740	14626	257	3157995
334 4353	CHAR-DS-HAR-HI-OK, FLA(SC 4)	5	118719	25088	211	3276714
334 4055	FREDRICKSBURG, VA(NC 5)	5	86427	26859	310	3363141
334 4057	CULPEPER, VA(N 5)	5	75894	14110	185	3439035

334 4059	WYTHEVILLE, VA(SW 5)	5	73034	13008	178	3512069
334 4465	WAYCROSS, GA(SE 5)	5	66569	11898	178	3578638
334 4261	HOPE, ARK(SW 5)	5	64657	12737	196	3643295
334 4361	LAKE CITY, FLA(NORTH 5)	5	64507	20855	323	3707802
334 4468	JESUP, GA(FC 5)	5	63805	12143	190	3771607
334 4461	CORDELE, GA(SC 6)	6	71072	16987	239	3842679
334 4064	AM-BR-GR-LU-NO-EM, VA(S 6)	6	64556	12541	194	3907235
334 4362	PERRY, FLA(NORTH 6)	6	63012	15294	242	3970247
334 5169	FALMOUTH, KY(NC 6)	6	62892	11608	184	4033139
334 4063	COVINGTON, VA(WC 5)	7	63255	17794	281	4096394
334 5151	FRANFORT, KY(NC 8)	8	102326	19594	191	4198720
334 4070	TAPPAHANNOCK, VA(EAST 8)	8	60530	12755	210	4259250
	CELL 411: WEST, CENTRAL, LOW -- 1 SELECTION					
411 4903	SAN ANTONIO, TX(BEXAR)	1	894456	117864	131	894456
411 7106	SAN FRANCISCO, CAL(S.F)	1	687450	92435	134	1581906
411 4905	EL PASO, TX(EL PASO)	1	390061	51284	131	1971967
411 4909	MCALLEN, TX(HIDALGO)	1	205317	22831	111	2177284
411 4912	GALVESTON, TX(GALVESTON)	1	176026	24202	137	2353310
411 4913	BROWNSVILLE, TX(CAMERON)	1	158785	19114	120	2512095
411 6703	OGDEN, UT(WEBER)	1	130767	17627	134	2642862
411 5303	LAWTON, OK(COMANCHE)	1	102165	12504	122	2745027
411 4920	LAREDO, TX(WEBB)	1	80324	10468	130	2825351
	CELL 412: WEST, CENTRAL, MODERATE -- 1 SELECTION					
412 7103	SAN DIEGO, CAL(SAN DIEGO)	1	1469822	214513	145	1469822
412 6101	PHOENIX, AZ(MARICOPA)	1	1126620	169657	150	2596442
412 7105	OAKLAND, CAL(ALAMEDA)	1	1091819	172437	157	3688261
412 5301	OKLAHOMA CITY, OK(OKLAHOMA)	1	547913	83287	152	4236174
412 6201	DENVER, COL	1	515593	72367	140	4751767
412 6701	SALT LAKE CITY, UT(SALT LAKE)	1	492379	75905	154	5244146
412 6102	TUCSON, AZ(PIMA)	1	415556	59907	144	5659702
412 7303	SPOKANE, WA(SPOKANE)	1	301016	46758	155	5960718
412 4907	CORPUS CHRISTI, TX(NUECES)	1	247509	36743	148	6208227
412 4908	BEAUMONT, TX(JEFFERSON)	1	239410	34520	144	6447637
412 6402	GREAT FALLS, MON(CASCADE)	1	84519	12913	152	6532156
412 4923	TEXARCANA, TX(BOWIE)	1	68411	10364	151	6600567
412 4925	BRYAN, TX(BRAZOS)	1	65145	9240	141	6665712
412 4906	AUSTIN, TX(HAYS-TRAVIS)	2	375051	57508	153	7040763
412 7203	SALEM, OR(MARION-POLK)	2	199530	30254	151	7240293
412 4910	KILLEEN, TX(BELL-COR)	2	196773	27275	138	7437066
412 4915	WICHITA FALLS, TX(CLAY-WICH)	2	128496	20215	157	7565562
	CELL 413: WEST, CENTRAL, AVERAGE -- 2 SELECTIONS					
413 4901	HOUSTON, TX(HARRIS)	1	1860475	297867	160	1860475
413 7102	ANAHEIM, CAL(ORANGE)	1	1596920	266658	166	3457395
413 4902	DALLAS, TX(DALLAS)	1	1362575	235477	172	4819970
413 7104	SAN JOSE, CAL(SANTA CLARA)	1	1156734	184810	159	5976704
413 7301	SEATTLE, WA(KING)	1	1124454	193882	172	7101158
413 7108	SACRAMENTO, CAL(SACRAMENTO)	1	675049	110601	163	7776207
413 7110	FRESNO, CAL(FRESNO)	1	435226	75923	174	8211433
413 7111	OXNARD, CAL(VENTURA)	1	419900	67829	161	8631333
413 3501	OMAHA, NE(DOUGLAS)	1	414483	68037	164	9045816
413 5302	TULSA, OK(TULSA)	1	412898	69858	169	9458714
413 7302	TACOMA, WA(PIERCE)	1	392441	63169	160	9851155
413 7113	STOCKTON, CAL(SAN JOAQUIN)	1	298541	50855	170	10149696
413 7114	SANTA BARBARA, CAL(S. BAR.)	1	276759	47162	170	10426455
413 7115	SALINAS, CAL(MONTEREY)	1	255478	44661	174	10681933
413 7117	MODESTO, CAL(STANISLAUS)	1	207072	33541	161	10889005
413 3502	LINCOLN, NE(LANCASTER)	1	181003	30169	166	11070008

413	6702	PROVO, UT(UTAH)	1	158118	26615	168	11228126
413	4914	WACO, TX(MCLENNAN)	1	152899	25704	168	11381025
413	7305	YAKIMA, WA(YAKIMA)	1	149386	25247	169	11530411
413	7119	SANTA CRUZ, CAL(SANTA CRUZ)	1	143979	24466	169	11674390
413	6203	PUEBLO, COL(PUEBLO)	1	124192	19649	158	11798582
413	4921	SHERMAN, TX(GRAYSON)	1	77538	13296	171	11876120
413	4922	SAN ANGELO, TX(TOM GREEN)	1	73150	12224	167	11949270
413	6601	ALBUQUERQUE, NM(BERN-SAN)	2	377736	65663	173	12327006
413	6202	COLORADO SPRINGS, COL	2	288713	48846	169	12615719

CELL 414: WEST, CENTRAL, HIGH -- 1 SELECTION

414	4904	FORT WORTH, TX(TARRANT)	1	719476	126103	175	719476
414	7107	SAN BERNADINO, CAL(S. BER)	1	694548	130335	187	1414024
414	7201	PORTLAND, OR(MULTNOMAH)	1	547191	97753	178	1961215
414	7109	RIVERSIDE, CAL(RIVERSIDE)	1	502143	92378	183	2463358
414	7112	BAKERSFIELD, CAL(KERN)	1	335572	79517	236	2798930
414	6501	LAS VEGAS, NEV(CLARK)	1	307537	69326	225	3106467
414	7304	EVERETT, WA(SNOHOMISH)	1	258615	45699	176	3365082
414	7116	SANTA ROSA, CAL(SONOMA)	1	234197	44739	191	3599279
414	7202	EUGENE, OR(LANE)	1	227547	40011	175	3826826
414	4911	LUBBOCK, TX(LUBBOCK)	1	189232	35664	188	4016058
414	7118	VALLEJO, CAL(SOLANO)	1	178927	33617	187	4194985
414	3202	TOPEKA, KA(SHAWNEE)	1	160133	32085	200	4355118
414	6502	RENO, NEV(WASHOE)	1	136423	36217	265	4491541
414	6301	BOISE, ID(ADA)	1	127875	25190	196	4619416
414	4917	TYLER, TX(SMITH)	1	104452	19366	190	4723868
414	3701	SIOUX FALLS, SD(MINNEHAHA)	1	98152	20790	211	4822020
414	6401	BILLINGS, MON(YELLOWSTONE)	1	93905	19604	208	4915925
414	4918	ODESSA, TX(ECTOR)	1	93071	17820	191	5008996
414	4919	AMARILLO, TX(POTTER)	1	90048	24631	273	5099044
414	3601	FARGO, ND(CASS)	1	78924	15444	195	5177968
414	4924	MIDLAND, TX(MIDLAND)	1	65936	12908	197	5243904
414	3201	WICHITA, KA(BUT-SEDGE)	2	374648	71123	189	5618552
414	7306	RICHLAND, WA(SC 2)	2	95735	17069	178	5714287
414	4916	ABILENE, TX(CAL-JON-TAY)	3	125366	26211	209	5839653

CELL 421: WEST, SUBURBAN, LOW -- 0 SELECTION

421	7231	CLACKAMAS, OR(PORT. M)	1	189521	25134	132	189521
421	6234	BOULDER, COL(DEN. M)	1	156789	20997	133	346310
421	7331	CLARK, WA(PORT. M)	1	144397	16486	114	490707
421	6731	DAVIS-TOOELE, UT(S.L. M)	2	130143	14629	112	620850
421	4938	FT BEND-WALLER, TX(HOUS. M)	2	81765	10485	128	702615
421	5334	LEFLORE-SEQUOYAH,OK(FTSMITH M)	2	58644	7937	135	761259

CELL 422: WEST, SUBURBAN, MODERATE -- 0 SELECTION

422	7131	CONTRA COSTA, CAL(S.F. M)	1	582754	86424	148	582754
422	7133	MARIN, CAL(S.F. M)	1	212154	30973	145	794908
422	7232	WASHINGTON, OR(PORT. M)	1	181342	27524	151	976250
422	4932	BRAZORIA, TX(HOUSTON M)	1	115802	17196	148	1092052
422	7136	NAPA, CAL(VALLEJO M)	1	83898	12836	152	1175950
422	3531	SARPY, NE(OMAHA M)	1	71712	10117	141	1247662
422	6231	GILPIN-JEFFERSON, COL(DEN. M)	2	285209	42756	149	1532871
422	4934	HARDIN-ORANGE, TX(BEAU. M)	2	106500	16642	156	1639371
422	5332	CREEK-OSAGE, OK(TULSA M)	2	79260	11928	150	1718631
422	4931	CHAM-LIB-MONT, TX(HOUSTON M)	3	123096	18757	152	1841727
422	5333	MAYES-ROG-WAG, OK(TULSA M)	3	82939	12698	153	1924666
422	5331	CAN-CLE-MCL-PCT, OK(O.C. M)	4	202163	30619	151	2126829

CELL 423: WEST, SUBURBAN, AVERAGE -- 0 SELECTION

423	7132	SAN MATEO, CAL(S.F. M)	1	569123	97501	171	569123

423	6232	ADAMS, COL(DEN. M)	1	210231	36673	174	779394
423	7134	YOLO, CAL(SAC. M)	1	102851	16929	164	882245
423	4940	RANDALL, TX(AMAR. M)	1	57826	9505	164	940071
423	4941	SAN PATRICIO, TX(C.G. M)	1	50459	8555	169	990490
423	3231	JOHNSON-OSAGE, KA(KC-TOP M)	2	247043	42815	173	1237533
423	6233	ARAPAHOE-DOUGLAS, COL(DEN M)	2	209570	33184	158	1447103
423	4933	DENTON-WISE, TX(DAL. M)	2	113863	18224	160	1560966
423	4936	COLLIN-ROCKWALL, TX(DAL M)	2	89650	14191	158	1650616
423	4939	COMAL-GUAD, TX(S.A. M)	2	65653	11232	171	1716269
		CELL 424: WEST, SUBURBAN, HIGH -- 1 SELECTION					
424	7135	PLACER, CAL(SAC. M)	1	86474	21206	245	86474
424	3232	JEFF-WYAN, KA(KC-TOP M)	2	196078	36740	187	282552
424	4937	ELLIS-KAUFMAN, TX(DAL M)	2	85509	16680	195	368061
424	4935	HOOD-JOHN-PARKER, TX(DAL M)	3	93017	18755	201	461078
		CELL 431: WEST, RURAL, LOW -- 0 SELECTION					
431	6251	FORT COLLINS, COL(LARIMER)	1	110303	14897	135	110303
431	7351	BREMERTON, WA(KITSAP)	1	103020	12340	119	213323
431	7162	KINGS, CAL(SC 1)	1	68884	9418	136	282207
431	3261	LAWRENCE, KA(DOUGLAS)	1	61028	7812	128	343235
431	3266	LEAVENWORTH, KA(NE)	1	54722	7207	131	397957
431	6652	FARMINGTON, NM(NW 2)	2	90676	12002	132	488633
431	4959	NACOGDOCHES, TX(E 2)	2	76294	9968	130	564927
431	7258	MCMINNVILLE, OR(NW 2)	2	61879	8329	134	626806
431	5367	BARTLESVILLE, OK(NE 2)	2	51605	5770	111	678411
431	5352	MUSKOGEE, OK(EAST 3)	3	101379	12608	124	779790
431	5364	CHOC-MCCU-PUSH, OK(SE 3)	3	60691	7637	125	840481
431	7352	WALLA WALLA-PULLMAN, WA(SE 5)	5	104714	13501	128	945195
431	4986	RAYMONDVILLE, TX(S 6)	6	53340	7274	136	998535
431	6351	CALDWELL, ID(WC 7)	7	110321	12397	112	1108856
		CELL 432: WEST, RURAL, MODERATE -- 0 SELECTION					
432	7156	BUTTE, CAL(NC 1)	1	114898	17600	153	114898
432	6252	GREELEY, COL(WELD)	1	103127	15032	145	218025
432	6253	GRAND JUNCTION, COL(W 2)	2	73509	10923	148	291534
432	4955	KINGSVILLE, TX(S 3)	3	79874	11353	148	371408
432	4963	PARIS, TX(NE 3)	3	75287	11432	151	446695
432	7159	MARYSVILLE, CAL(NC 3)	3	74628	11522	154	521323
432	7358	PORT ANGELES, WA(NW 3)	3	71350	11234	157	592673
432	5356	HUGH-SEM-PONT, OK(EC 3)	3	70433	10011	142	663106
432	7362	FER-OKAN-PO-STE, WA(NE 4)	4	57461	8446	146	720567
432	5363	ALTUS, OK(SW 4)	4	56592	7882	139	777159
432	6353	LEWISTON, ID(NC 5)	5	86015	12834	149	863174
432	4967	PLAINVIEW, TX(NW 5)	5	73442	10914	148	936616
432	4969	SAN AUGUSTINE, TX(E 5)	5	72912	10445	143	1009528
432	4983	EAGLE PASS, TX(SW 5)	5	57432	8890	154	1066960
		CELL 433: WEST, RURAL, AVERAGE -- 1 SELECTION					
433	7151	VISALIA, CAL(TULARE)	1	199206	31900	160	199206
433	6153	CASA GRANDE, AZ(PINAL)	1	80816	13220	163	280022
433	6653	ROSWELL, NM(SE 2)	2	86885	14786	170	366907
433	6354	IDAHO FALLS, ID(EAST 2)	2	84978	14094	165	451885
433	7259	ASTORIA, OR(NW 2)	2	59507	9649	162	511392
433	7354	MOUNT VERNON, WA(NW 3)	3	89379	15413	172	600771
433	6157	GLOBE, AZ(EC 3)	3	61731	10420	168	662502
433	5365	MCALESTER, OK(EC 3)	3	56329	9176	162	718831
433	7353	LONGVIEW, WA(SW 4)	4	92360	14644	158	811191
433	6452	KALISPELL, MON(NW 4)	4	83140	14144	170	894331
433	4965	QUITMAN, TX(NE 4)	4	74119	12554	169	968450

433	3256	OTTAWA, KA(EAST 4)	4	65554	11231	171	1034004
433	4982	CUERO, TX(SC 4)	4	57849	9162	158	1091853
433	4954	GEORGETOWN, TX(C 5)	5	81569	13637	167	1173422
433	4968	BRENHAM, TX(EC 5)	5	72957	12104	165	1246379
433	5361	DURANT, OK(SOUTH 5)	5	60572	9675	159	1306951
433	3759	BROCKINGS, SD(EAST 5)	5	53037	8646	163	1359988
433	4961	DEL RIO-UVALDE, TX(SW 6)	6	75355	12777	169	1435343
433	3659	SOUTHEAST ND(6 COUNTIES)	6	50575	8543	168	1485918
433	6457	HAVRE, MON(NC 7)	7	57257	9834	171	1543175
433	3755	STURGIS, SD(NW 8)	8	62702	10971	174	1605877

CELL 434: WEST, RURAL, HIGH -- 1 SELECTION

434	7155	SAN LUIS OBISPO, CAL(WC)	1	118959	27175	228	118959
434	7355	BELLINGHAM, WA(WHATCOM)	1	87943	15463	175	206902
434	7356	OLYMPIA, WA(THURSTON)	1	85127	15469	181	292029
434	4956	LONGVIEW, TX(GREGG)	1	79146	15808	199	371175
434	7255	ROSEBURG, OR(DOUGLAS)	1	78681	19617	249	449856
434	7256	ALBANY, OR(LINN)	1	77899	14169	181	527755
434	7158	IMPERIAL, CAL(SE)	1	77436	16994	219	605191
434	6654	LAS CRUCES, NM(DONA ANA)	1	75749	13658	180	680940
434	6155	FLAGSTAFF, AZ(COCONINO)	1	69636	23893	343	750576
434	6156	YUMA, AZ(SW)	1	66481	17830	268	817057
434	6852	CHEYENNE, WY(LARAMIE)	1	61854	13510	218	878911
434	7361	GRAYS HARBOR, WA(WEST)	1	60278	11635	193	939189
434	6660	HOBBS, NM(LEA)	1	48353	10344	213	987542
434	7251	MEDFORD, OR(SW 2)	2	149780	28348	189	1137322
434	7154	EUREKA, CAL(NW 2)	2	117867	21283	180	1255189
434	6151	WINSLOW, AZ(NE 2)	2	106900	20035	187	1362089
434	6651	GALLUP, NM(NW 2)	2	94909	22165	233	1456998
434	6152	DOUGLAS, AZ(SE 2)	2	88988	17239	193	1545986
434	7253	CORVALLIS, OR(WEST 2)	2	85270	14924	175	1631256
434	6154	PRESCOTT, AZ(NW 2)	2	80098	25134	313	1711354
434	7161	UKIAH, CAL(NW 2)	2	76890	16348	212	1788244
434	6655	SANTA FE, NM(NC 2)	2	75007	14432	192	1863251
434	3652	GRAND FORKS, ND(EAST 2)	2	74641	13747	184	1937892
434	7257	COOS BAY, OR(SW 2)	2	72086	13086	181	2009978
434	3252	HUTCHINSON, KA(CEN 2)	2	69978	12602	180	2079956
434	7360	CHEHALIS, WA(WEST 2)	2	63347	13531	213	2143303
434	5360	CHICKASHA, OK(WC 2)	2	62826	11347	180	2206129
434	6854	CASPER, WY(EC 2)	2	59262	13806	232	2265391
434	7260	KLAMATH FALLS, OR(SC 2)	2	58568	12084	206	2323959
434	5353	STILLWATER, OK(NC 3)	3	96258	17069	177	2420217
434	3251	MANHATTAN, KA(NC 3)	3	85212	15073	176	2505429
434	7357	WENATCHEE, WA(CEN 3)	3	84705	23182	273	2590134
434	6451	MISSOULA, MON(WEST 3)	3	83714	20457	244	2673848
434	4953	PALESTINE, TX(E 3)	3	82340	15417	187	2756188
434	6356	TWIN FALLS, ID(SOUTH 3)	3	80559	16581	205	2836747
434	4958	BAY CITY, TX(SE 3)	3	76729	13723	178	2913476
434	7160	YUBA CITY, CAL(NC 3)	3	74483	14744	197	2987959
434	4964	CORSICANA, TX(EC 3)	3	74468	16666	223	3062427
434	4966	GREENVILLE, TX(NE 3)	3	73898	15007	203	3136325
434	5357	PONCA CITY, OK(NC 3)	3	70881	12795	180	3207206
434	4970	MARSHALL, TX(E 3)	3	69183	13082	189	3276389
434	3552	FREMONT, NE(EAST 3)	3	67541	14343	212	3343930
434	3253	NEWTON, KA(CEN 3)	3	66197	15250	230	3410127
434	3255	CHEROKEE-LABETTE-NEOSHO,KA(SE)	3	65892	11623	176	3476019
434	7359	MOSES LAKE, WA(EC 3)	3	65733	12934	196	3541752
434	3254	WELLINGTON, KA(SOUTH 3)	3	65429	12916	197	3607181
434	5358	MIAMI, OK(NE 3)	3	64877	13926	214	3672058
434	7163	RED BLUFF, CAL(NE 3)	3	61422	17996	292	3733480

434	3262	FORT SCOTT, KA(EAST 3)	3	60780	11102	182	3794260
434	5362	OKMULGEE, OK(EC 3)	3	60313	11950	198	3854573
434	3264	JUNCTION CITY, KA(CEN 3)	3	59096	12697	214	3913669
434	6659	ALAMOGORDO, NM(SC 3)	3	55602	11377	204	3969271
434	7152	MERCED, CAL(CEN 4)	4	181520	36604	201	4150791
434	7153	REDDING, CAL(NORTH 4)	4	135809	33974	250	4286600
434	7157	PLACERVILLE, CAL(EAST 4)	4	105137	24584	233	4391737
434	4951	VICTORIA, TX(S 4)	4	93005	17532	188	4484742
434	4952	LUFKIN, TX(E 4)	4	91972	18155	197	4576714
434	5354	ARDMORE, OK(SOUTH 4)	4	82387	15856	192	4659101
434	3651	MINOT, ND(NW 4)	4	77286	14558	188	4736387
434	4962	LA GRANGE, TX(SC 4)	4	75343	15408	204	4811730
434	6656	CLOVIS, NM(EAST 4)	4	72820	18718	257	4884550
434	6851	LANDER, WY(SW 4)	4	68945	21788	316	4953495
434	3257	SALINA, KA(CEN 4)	4	64143	17333	270	5017638
434	5359	DUNCAN, OK(SOUTH 4)	4	64117	11370	177	5081755
434	6456	BUTTE, MON(SW 4)	4	63544	13784	216	5145299
434	4980	HUNTSVILLE, TX(EC 4)	4	62336	13634	218	5207635
434	6853	LARAMIE CITY, WY(SE 4)	4	60735	20786	342	5268370
434	3263	INDEPENDENCE, KA(SE 4)	4	59731	11088	185	5328101
434	4981	FAL-LEO-LIM-ROB, TX(EC 4)	4	59035	10727	181	5387136
434	3655	BISMARCK, ND(CEN 4)	4	58931	11055	187	5446067
434	3265	GREAT BEND, KA(CEN 4)	4	56994	12449	218	5503061
434	3563	NEBRASKA CITY, NE(SE 4)	4	56045	11698	208	5559106
434	7261	BAKER, OR(SW 4)	4	54023	9563	177	5613129
434	4988	PALO PINTO, TX(NC 4)	4	52480	13718	261	5665609
434	6352	COEUR D'ALENE, ID(N 5)	5	91969	18421	200	5757578
434	7254	PENDLETON, OR(NW 5)	5	80324	18891	235	5837902
434	4971	CAM-CAS-FR-MO-TI, TX(NE 5)	5	69891	15928	227	5907793
434	6454	HELENA, MON(WC 5)	5	67686	12814	189	5975479
434	4974	GAINESVILLE-GRAHAM, TX(N 5)	5	67413	15142	224	6042892
434	3554	GRAND ISLAND, NE(CEN 5)	5	64569	19433	300	6107461
434	3555	KEARNEY, NE(CEN 5)	5	64117	21542	335	6171578
434	3260	ATCHISON, KA(NE 4)	5	62308	12371	198	6233886
434	3654	DEVILS LAKE, ND(NE 5)	5	59140	11936	201	6293026
434	3560	COLUMBUS, NE(EC 5)	5	58698	12047	205	6351724
434	3562	BEATRICE, NE(SE 5)	5	57239	10037	175	6408963
434	5351	ENID, OK(NC 6)	6	101976	21010	206	6510939
434	6751	LOGAN, UT(N 6)	6	93775	16818	179	6604714
434	6355	POCATELLO, ID(SE 6)	6	82587	16473	199	6687301
434	4957	BEEVILLE, TX(S 6)	6	77429	15561	200	6764730
434	4960	HILLSBORO-STEPHENVILLE, TX(C6)	6	76137	15660	205	6840867
434	3551	NORFOLK, NE(NE 6)	6	74597	15670	210	6915464
434	3752	YANKTON, SD(SE 6)	6	72691	16504	227	6988155
434	5355	BE-BL-CU-DE-RM-WA, OK(WEST 6)	6	71757	19704	274	7059912
434	4972	BROWNFIELD, TX(N 6)	6	67674	15421	227	7127586
434	3753	ABERDEEN, SD(NORTH 6)	6	65105	13419	206	7192691
434	3259	EMPORIA, KA(EC 6)	6	63893	15208	238	7256584
434	3557	HASTINGS, NE(SOUTH 6)	6	63138	13321	210	7319722
434	4978	BROWNWOOD, TX(CEN 6)	6	63106	12381	196	7382828
434	4979	BIG SPRING, TX(WEST 6)	6	62769	15408	245	7445597
434	6658	SILVER CITY, NM(SW 6)	6	61788	23395	378	7507385
434	3756	WATERTOWN, SD(NE 6)	6	60863	11163	183	7568248
434	3558	YORK, NE(EC 6)	6	60011	16503	274	7628259
434	3561	S SIOUX CITY, NE(NE 6)	6	58460	12139	207	7686719
434	3657	JAMESTOWN, ND(EC 6)	6	54213	12249	225	7740932
434	3268	CONCORDIA, KA(NC 6)	6	53388	15765	295	7794320
434	5366	BE-CI-EL-HA-TE-WO, OK(NW 6)	6	52389	12332	235	7846709
434	3271	DODGE CITY, KA(SW 6)	6	50608	12678	250	7897317
434	6856	SHERIDAN, WY(NE 6)	6	50235	15258	303	7947552

434	7252	BEND, OR(NC 7)	7	96247	22527	234	8043799
434	6657	LAS VEGAS, NM(NE 7)	7	70642	20958	296	8114441
434	6254	STERLING, COL(NE 7)	7	69775	19384	277	8184216
434	6753	PRICE, UT(EAST 7)	7	68826	12762	185	8253042
434	4977	BORGER, TX(NW 7)	7	64173	17137	267	8317215
434	3556	SCOTTS BLUFF, NE(W 7)	7	63933	17493	273	8381148
434	3258	HAYS, KA(NC 7)	7	63227	17470	276	8444375
434	6357	MOUNTAIN HOME, ID(SW 7)	7	58700	11519	196	8503075
434	3656	RUGBY, ND(NC 7)	7	57785	10187	176	8560860
434	6259	ALAMOSA, COL(SC 7)	7	56980	13893	243	8617840
434	4985	PECOS, TX(WEST 7)	7	54145	18288	337	8671985
434	3658	MANDAN, ND(WC 7)	7	53029	10878	205	8725014
434	6855	CODY, WY(NW 7)	7	51632	15400	298	8776646
434	3751	RAPID CITY, SD(SW 8)	8	99673	19544	196	8876319
434	4975	SNYDER, TX(WC 8)	8	67510	19346	286	8943829
434	4976	HEREFORD, TX(NW 8)	8	64237	16494	256	9008066
434	3754	MITCHELL, SD(EC 8)	8	63235	18095	286	9071301
434	6258	DURANGO, COL(SW 8)	8	62878	11937	189	9134179
434	3757	HURON, SD(EC 8)	8	55001	10421	189	9189180
434	4987	PAMPA, TX(NW 8)	8	53272	13898	260	9242452
434	6358	REXBURG, ID(EC 8)	8	52720	12079	229	9295172
434	6552	ELKO, NEV(N-W 7)	8	52260	28911	553	9347432
434	6551	CARSON CITY, NEV(7+CAL 3)	9	78252	29548	377	9425684
434	6752	RICHFIELD, UT(SW 11)	9	77662	25209	324	9503346
434	6453	BOZEMAN, MON(SC)	9	75645	18610	246	9578991
434	3653	DICKINSON, ND(SW 11)	9	70964	16502	232	9649955
434	6255	CANON CITY, COL(CEN 9)	9	69588	16117	231	9719543
434	4973	KERRVILLE, TX(C 9)	9	67812	17713	261	9787355
434	6455	LEWISTOWN-GLASGOW, MON(NE 11)	9	67378	15820	234	9854733
434	6256	LA JUNTA, COL(SW 9)	9	66614	18404	276	9921347
434	3553	NORTH PLATTE, NE(WC 12)	9	65552	23483	358	9986899
434	6257	CRAIG, COL(NW 9)	9	64579	22230	344	10051478
434	3559	CHADRON-O'NEILL, NE(N 10)	9	59453	14112	237	10110931
434	4984	VERNON, TX(NC 11)	9	56870	14266	250	10167801
434	3758	PIERRE, SD(CEN 11)	9	54813	12988	236	10222614
434	3267	GARDEN CITY, KA(W 11)	9	54660	14350	262	10277274
434	6458	MILES CITY-GLENDIVE, MON(SE10)	9	52811	12787	242	10330085
434	3269	N W KANSAS, 9 COUNTIES	9	52209	13485	258	10382294
434	3564	MCCOOK, NE(SW 10)	9	52118	11977	229	10434412
434	3270	LIBERAL, KA(SW 10)	9	51871	13835	266	10486283
434	4989	FT STOCKTON, TX(WEST 12)	9	50743	16775	330	10537026

APPENDIX E

QUESTIONS WHICH FORM THE BASIS FOR THE NATIONAL ACCIDENT SAMPLING SYSTEM DESIGN

An initial list of approximately 50 questions was furnished to HSRI by the sponsor, indicating the types of questions for which the NASS should be designed. In addition to this initial list, comments were solicited from other staff members at NHTSA and elsewhere to arrive at a more complete tabulation.

In order to define the data elements to be acquired in the field, as well as the appropriate sample size, these questions were studied with respect to known rates of occurrence in police-reported accident data sets. As estimate of the precision of estimating the frequency of each parameter was then made, assuming a particular time period (say 1, 2, or 3 years) and a cluster design effect of the order 2.5 (i.e., a multiplier on the simple random sampling variance). The latter number is, of course, only an approximation, but serves to indicate the relative error which might be expected in the various factors.

Questions are listed roughly in the order of priority expressed by the likely users. It should be clear that some questions are unanswerable with the desired precision in a sample of the order of 15,000 cases--either because of a low frequency of occurrence, or because (as in the case of the frequency of carbon monoxide poisoning) the inability to acquire the data with precision.

The error figure shown is an estimate of the 95% bound--e.g., the national number of fatal accidents might be estimated by the NASS with a 95% error bound of $\pm$ 10%--certainly much poorer than that achieved by FARS. Estimates for many parameters will be much better than that. Actual error of estimates will, of course, depend on the data. The figures shown here are for planning purposes only.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
1) Number (rate) of fatal accidents?	5	10%	1 Yr.
2) Number (rate) of injury accidents?	5	1.5%	1 Yr.
3) Number (rate) of property damage (non-injury) accidents?	5	1.5%	1Yr.
4) Number of injuries (including fatal injuries) by injury index (OIC)?	5	2%	1 Yr.
5) Distribution of impact speeds of vehicles in accident?	5	6%	1 Yr.
(0-10, 10-20, ---)		3%	3 Yrs.
6) Distribution of accidents by collision type and vehicle size category?	5	2%	1 Yr.
7) Number (rate) of school buses in accidents by crash severity (VDI) and occupant injury distribution (OIC)?	5	Large	---
8) Number (rate) of bicycle involvement in accidents?	5	16%	1 Yr.
9) Number (rate) of pedestrians involved in accidents?	5	6%	1 Yr.
10) Number (rate) of fatal, injury, property damage accidents by urban/rural, collision/non/collision, vehicle/train, pedestrian, bicycle, motorcycle, fixed object, other vehicle, roll-over, hit/run?	4+	1.5-15%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
11) Number (rate) of injuries (including fatal injuries) by injury index (OIC) for restrained and unrestrained accident vehicle occupants?	4+	2%	1 Yr.
12) Number (rate) of injuries (including fata injuries) by injury index (OIC) relative to accident vehicle size, make, model, year?	4+	2.6%	1 Yr.
13) Number (rate) of injuries (including fatal injuries) by injury index (OIC) and crash severity (VDI)?	4	2%	1 Yr.
14) Number (rate) of injuries (including fatal injuries) by injury index (OIC) and occupant seated position?	4	2%	1 Yr.
15) Number (rate) of accident vehicle drivers in terms of driver sex and age?	4	1.2%	1 Yr.
16) Number (rate) of accident vehicle occupants where drinking, intoxication and/or drugs involved?	4	4.8%	1 Yr.
17) Number (rate) of accidents involving bicycles by rider injury index (OIC) and crash type?	4	Large	1 Yr.
18) Number (rate) of trucks (>10,000 lbs.) in accidents by truck type (straight, semi-dbl-bottom)?	4	15% 11%	1 Yr. 2 Yrs.
19) Distribution of "assessed causal factors" in accidents?	4	5%	1 Yr.

Question: "What is the ---"	Priority	Precision (Error)	Time Period Required
20) Distribution of occupant injuries (OIC) relative to vehicle impact speed (0-10, 10-20, ---)?	4	11% 6%	1 Yr. 3 Yrs.
21) Distribution of injuries (OIC), including fatal injuries, in terms of accident urban/rural, vehicle occupant, pedestrian, cyclist, day/night, sex, age, type roadway, holidays, and citations?	4	2.6% to 25%	1 Yr.
22) Number (rate) of accident vehicles where occupant(s) ejected in crash?	4	25% 14%	1 Yr. 3 Yrs.
23) Number (rate) of accidents by maximum crash severity (VDI)?	4	(Dependent upon whether accident vehicles, or accident events are to be sampled.)	
24) Number (rate) of accident by maximum injury index (OIC) and area (population, region, etc.)?	4		
25) Number (rate) of accidents accompanied by fuel leakage?	4	10% 6%	1 Yr. 3 Yrs.
26) Number (rate) of accidents accompanied by fire?	4	24% 14%	1 Yr. 3 Yrs.
27) Number (rate) of injuries (including deaths) by injury index (OIC) from fire in accidents?	4	Large	1 Yr.
28) Number (rate) of injuries, by injury index (OIC) to pedestrains in accidents by sex, age, action, and violation (if any)?	4	Large	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required)
29) Involvement (rate) of emergency vehicles (fire, police, ambulance) in accidents by crash severity (VDI) and occupant injury (OIC)?	4	Large	1 Yr.
30) Involvement (rate) of buses by type (non-school, urban, long-distance, etc.) in accidents.	4	Large	1 Yr.
31) Distribution of injuries (OIC) to occupants in bus accidents, and crash configurations of those accidents.	4	Large	1 Yr.
32) Number (rate) of motorcycle involvements in accidents?	4	5%	1 Yr.
33) Distribution of rider injuries (OIC) in motorcycle accidents?	4	20%	1 Yr.
34) Distribution of motorcycle accidents by crash type?	4	10%	1 Yr.
35) Number (rate) of pick-up truck involvement in accidents?	4	5%	1 Yr.
36) Percentage of drivers in accident vehicles who have received formal driver education?	4	2%	1 Yr.
37) Distribution of child restraint use in crashes by child sex, age, height, weight, and seated position in terms of injury (OIC) sustained?	4	1%	1 Yr.

Questions: "What is the ---?	Priority	Precision (Error)	Time Period Required
38) Distribution of accidents in which there was a driver improper maneuver or evasive action before the crash?	3+	10%	1 Yr.
39) Distribution of accident vehicle drivers by trip plan? (Recreation, business, local, errand, long distance, etc.)	3	2.4%	1 Yr.
40) Number (rate) of occupant ejection (partial/whole) by injury severity (OIC)?	3	40% 24%	1 Yr. 3 Yrs.
41) Distribution of occupant ejection by ejection route (side glass, windshield, doors, open compartment, etc.)?	3	60% 27%	1 Yr. 5 Yrs.
42) Distribution of accident vehicle driver experience (years driving, area-route familiarity)?	3	4%	1 Yr.
43) Accident vehicle driver familiarity with vehicle?	3	4%	1 Yr.
44) Incidence (number) of vehicle seat displacement and deformation in accident vehicles?	3	1.5%	1 Yr.
45) Involvement of pick-up trucks in accident in terms of maximum occupant injury (OIC)?	3	15%	1 Yr.
46) Involvement of pick-up trucks in accidents relative to crash type?	3	6%	1 Yr.
47) Door latch performance (separation, damage, failure, etc.) of vehicles in accidents?	3	1%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
48) Type and performance of child restraints (type, use, non-use, effectiveness, etc.) in accidents?	3	Large	1 Yr.
49) Distribution of side door penetration (side door performance in terms of inward crush) by crash orientation and severity (OIC)?	3	4%	1 Yr.
50) Distribution of occupant interior contacts in accidents relative to injuries sustained, restraint use, crash orientation and crash severity?	3	4%	1 Yr.
51) Distribution of restraint system (physical) failures (tears, unlatching, reel release, non-deployment, etc.) in accidents where restraints are utilized?	3	7%	1 Yr.
52) Distribution of impact angles in terms of impact speed of vehicles in accidents?	3	10%	1 Yr.
53) Sources of EMS in accidents?	3	(Dependent on whether accident vehicles or accident events are sampled.)	
54) Number (rate) of trucks (>10,000 lbs.) by type (straight, semi-, dbl-bottom) in accidents by maximum occupant injury and type crash?	3	24% 11%	1 Yr. 5 Yrs.
55) Number (rate) of accidents in which there was a vehicle defect?	3	15%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
56) Number (rate) of accidents involving pre-crash braking, steering or combinations thereof by collision configuration?	3	5%	1 Yr.
57) Distribution of accidents by accident type, severity, roadway alignment (geometrics) and different roadway facilities?	3	7%	1 Yr.
58) Influence of sight obstructions (trees, fixed objects, etc.) in accidents?	3	5%	1 Yr.
59) Performance of safety barrier designs relative to vehicle impact speed, impact angle, vehicle size, crash severity (VDI), and occupant injuries (OIC)?	3	15%	1 Yr.
60) Performance of windshields (condition, separation, fracture, occupant deformation, intrusion, etc.) in accidents by crash type and severity (VDI)?	2+	3%	1 Yr.
61) Number (rate) of collisions with animals?	2+	6%	1 Yr.
62) Number (rate) of collisions with "phantom" vehicles?	2+	Large	1 Yr.
63) Number (rate) of vehicles in accidents sustaining fuel system damage (deformation extent, puncture, separation, fuel spillage, etc.) by crash type and severity (VDI)?	2+	10%	1 Yr.
64) Number (rate) of accident vehicles involving "loss of control"?	2	5%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
65) Condition of tires (mix, thread stock, retread, faults, etc.) of vehicles in accidents?	2	2%	1 Yr.
66) Distribution of vehicles in accidents by crash orientation with EA column compression?	2	10%	1 Yr.
67) Distribution of driver injuries (OIC) relative to EA column compression?	2	10%	1 Yr.
68) Distribution of driver - steering wheel contact in accidents relative to crash orientation and severity (VDI)?	2	75% 22%	1 Yr. 10 Yrs.
69) Distribution of head restraint positions and crash performance (separation, deformation) in accidents relative to crash orientation and severity (VDI)?	2	5%	1 Yr.
70) Distribution of seat displacement and/or deformation in accidents relative to crash orientation and severity (VDI)?	2	4%	1 Yr.
71) Number (rate) of recreation vehicles (trailers, campers, etc.) involvements in accidents?	2	Large	1 Yr.
72) Involvement of recreation vehicles in accidents in terms of their crash type, and maximum injury (OIC)?	2	Large	1 Yr.
73) Number (rate) of motorcycle involvement in accidents where rider cited, and by type of citation?	2	10%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
74) Distribution of the severity of roof crush (ins. crush and location) type crash orientation, type roll-over and crash severity (VDI)?	2	10% 5%	1 Yr. 5 Yrs.
75) Extent of parked car involvement in accidents (midblock, intersection, legally parked, illegally parked)?	2	16%	1 Yr.
76) Number (rate) of accident vehicle drivers receiving "improper driving" type citations?	2	2%	1 Yr.
77) Number (rate) of accidents resulting in fire from crashed vehicle fuels?	2	32% 16%	1 Yr. 5 Yrs.
78) Distribution of injuries (OIC) resulting from vehicle hood penetration in crashes?	2	Large	1 Yr.
79) Relationship of weather and ambient related conditions (wind, rain, hail, storms, etc.) to accidents?	2	2%	1 Yr.
80) Effect of roadway traffic spray in causing accidents?	2	6%	1 Yr.
81) Contribution of roadside hazards to motor vehicle accidents (fixed object distance and size)?	2	7%	1 Yr.
82) Number (rate) of accidents inadequate and/or confusing signing or markings were a relevant causal consideration?	2	Large	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
83) Number (rate) of accidents occurring in construction zones as areas in terms of crash severity (VDI) and injury severity (OIC)?	2	15%	1 Yr.
84) Distribution of injuries in accidents by cost?	2	---	---
85) Distribution of injuries in accidents by degree of disability and length of disability?	2	---	---
86) Distribution of injuries in accidents in terms of lost employment?	2	---	---
87) Number (rate) of vehicles in accidents where the hood latch failed?	1	7%	1 Yr.
88) Number (rate) of recreation vehicles in accidents where the driver cited, and type of citation?	1	Large	---
89) Distribution of vehicle interior fires relative to location, extent, source, extinguishment and occupant injury (OIC)?	1	Large	---
90) Extent of carbon monoxide or "sleepy driver" involvements in accidents?	1	32%	1 Yr.
91) Influence of short driver visibility in accidents?	1	10%	1 Yr.
92) Relationship between tinted windshields in accidents, both daytime and nighttime?	1	4%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required)
93) Number (rate) of occupant entrapments in accident vehicles?	1	Large	---
94) Influence of visual glare (vehicle direction, sun position, sky conditions, windshield condition, etc.) in accidents?	1	15%	1 Yr.
95) Number (rate) of accidents with driver physical failures (illness, heart attach, abrupt disablement)?	1	Large	---
96) Number (rate) of accidents where improper or inadequate road edge maintenance was a factor in the crash (roadedge drop off)?	1	Large	---
97) Number (rate) of accidents resulting from previous accidents in terms of accident severity (VDI) and injury severity (OIC)?	1	Large	---
98) Number (rate) of accidents by injury index (OIC), where investigation accomplished by trained police accident investigator?	1	Large	---
99) Distribution of accidents involving fire between intermediate size passenger cars and trucks?	1	Large	---
100) Influence of "after market" devices and/or components on vehicles in accidents?	1	Large	---
101) Number (rate) of accidents where skidding occurred (wet and dry pavement)?	3	15%	1 Yr.

Questions: "What is the ---"	Priority	Precision (Error)	Time Period Required
102) Number (rate) of head-on collisions in passing zones; no passing zones; unmarked pavements?	4	15%	1 Yr.
103) Number (rate) of accidents where defective signals were a relevant consideration?	4	Large	1 Yr.
104) Number (rate) of accidents at narrow bridges (same width as road, but less width than shoulder and road)?	3	Large	1 Yr.
105) Number (rate) of roll-over accidents relative to fixed object collisions from ran-off-road vehicles?	3	10%	1 Yr.
106) Number (rate) of right turn accidents at "right turn on red" intersections relative to non "right turn on red intersections"?	4	Large	1 Yr.
107) Number (rate) of accident vehicles with studded snow tires relative to non-studded snow tires in dry, wet, and snowy pavements?	5	Large	1 Yr.
108) Number (rate) of heavy trucks (40,000-70,000 lbs.) in accidents relative to heavier (72,000-80,000 lbs.) trucks in accidents?	5	Large	1 Yr.
109) Number (rate) of accidents in delineated (edge striped) curves relative to non-delineated curves?	5	Large	1 Yr.

APPENDIX F

FIELD DATA FORMS

Acc. No. _____ V1

TRAFFIC UNIT INVESTIGATION

Documentation Compiled	( ) Vehcile Visit	( ) Interviews
( ) Hospital Medical Report	( ) Driver Record	( ) Vehl. Photos

IDENTIFICATION

Make/Model _____ Code _____

Model Yr. _____ Estimated Weight _____ lbs. Body Style _____

VIN _____ Function _____

Cargo _____ GVW _____

Axles _____ Tractor Wheels _____

Towed Trailer-Type _____ 20' 40': Jackknifed ____ Separated ____ Other _____

TIRES

	Tread/Type	Wear	Involvement/Condition/Notes
Front	_____	_____	_____
Rear	_____	_____	_____

EXTERNAL DAMAGE

Doors

Opened	FR	FL	RL	RR
Latches Separated	FR	FL	RL	RR
Hinges Separated	FR	FL	RL	RR

Other _____

Hood

Contact Windshield Y N ?

Penetration Y N ?

Latch Release Y N ?

Latch Damaged Y N ?

Windshield Cracked ____ Broken ____ Tinted Y N

Bond Separation ____ Occ. Contact ____

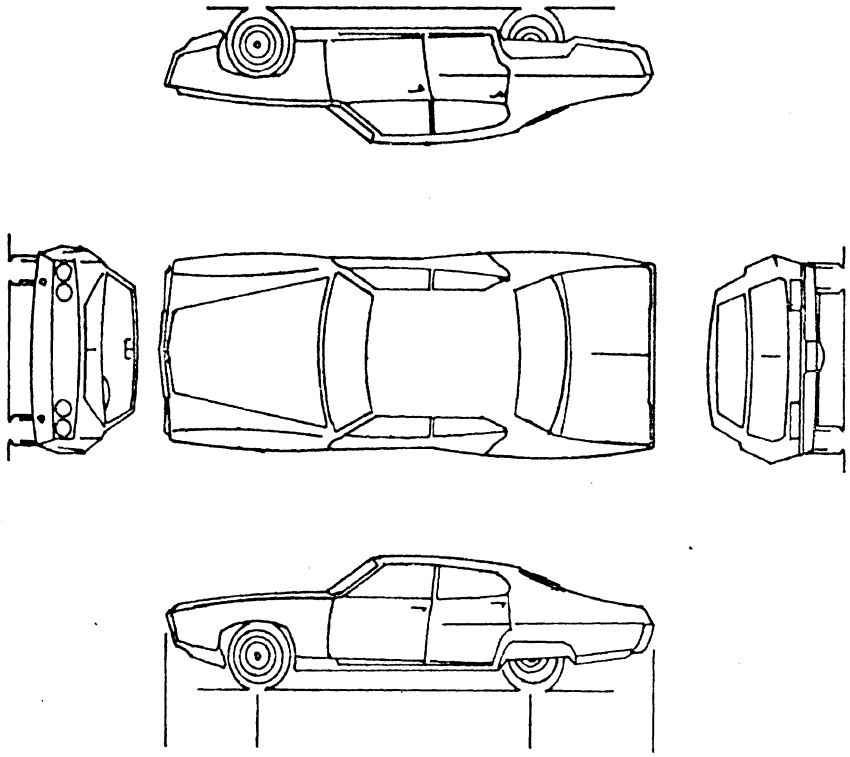
Fuel Leakage No Tank Neck Lines Engine

Fire Origin _____ Extent _____

Door Beam Present: Y N ? ⟶ Role: None Contact Damaged Separated

NOTES:

EXTERNAL DAMAGE



Primary	_____ CDC _____ in. Crush	Collision Type _____ Object Contacted _____ Event No. _____
Secondary	_____ CDC _____ in. Crush	Collision Type _____ Object Contacted _____ Event No. _____
Tertiary	_____ CDC _____ in. Crush	Collision Type _____ Object Contacted _____ Event No. _____

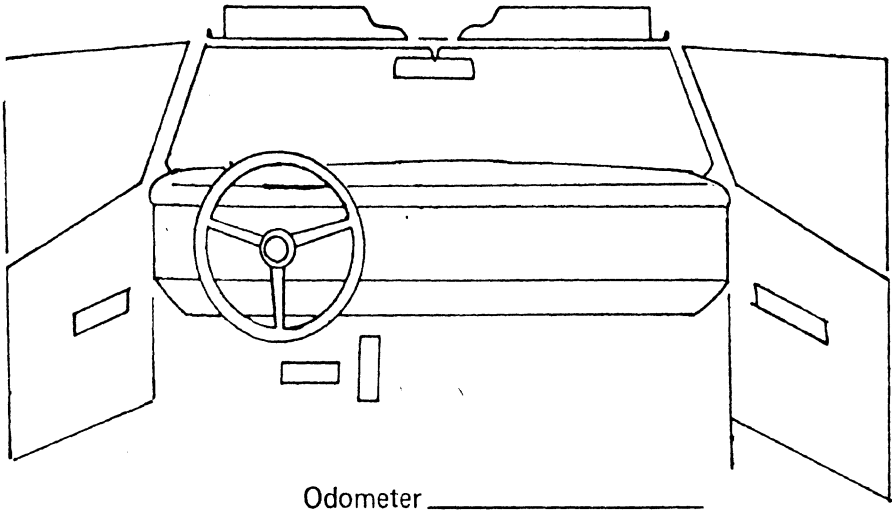
Vehicle Speed Estimate

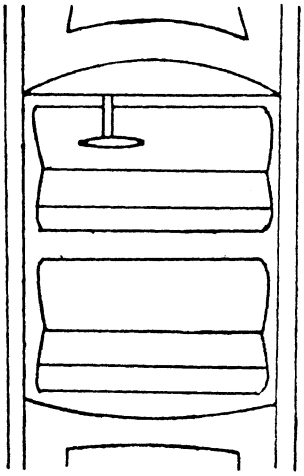
Precrash: _____ ± _____ MPH

First Impact: _____ ± _____ MPH

Source and/or Basis _____

INTERNAL DAMAGE





Odometer _____

Damage _____

_____

Contacts _____

_____

INTERIOR SKETCH

Passenger Compartment Reduced in Size: Y N ?

External Object Instrusion: Y N ?

Continuity of Side Structure Maintained:

Left: Y N ?

Right: Y N ?

Shear Capsule Separation: Y N ?

Head Restraints Equipped: Y N ?

Damaged: Y N ?

Seats: Bench Bucket ?

Damage _____

GENERAL INTERIOR

Restraints

	Front– L	C	R	Rear– L	C	R
Equipped						
Defeated/ Malfunction						

Codes

L = Lap

F = Lap & Torso

C = Child Restraint

A = ACRS

O = Other

? = Unknown

Describe and identify restraint if air cushion, child restraint, or other _____

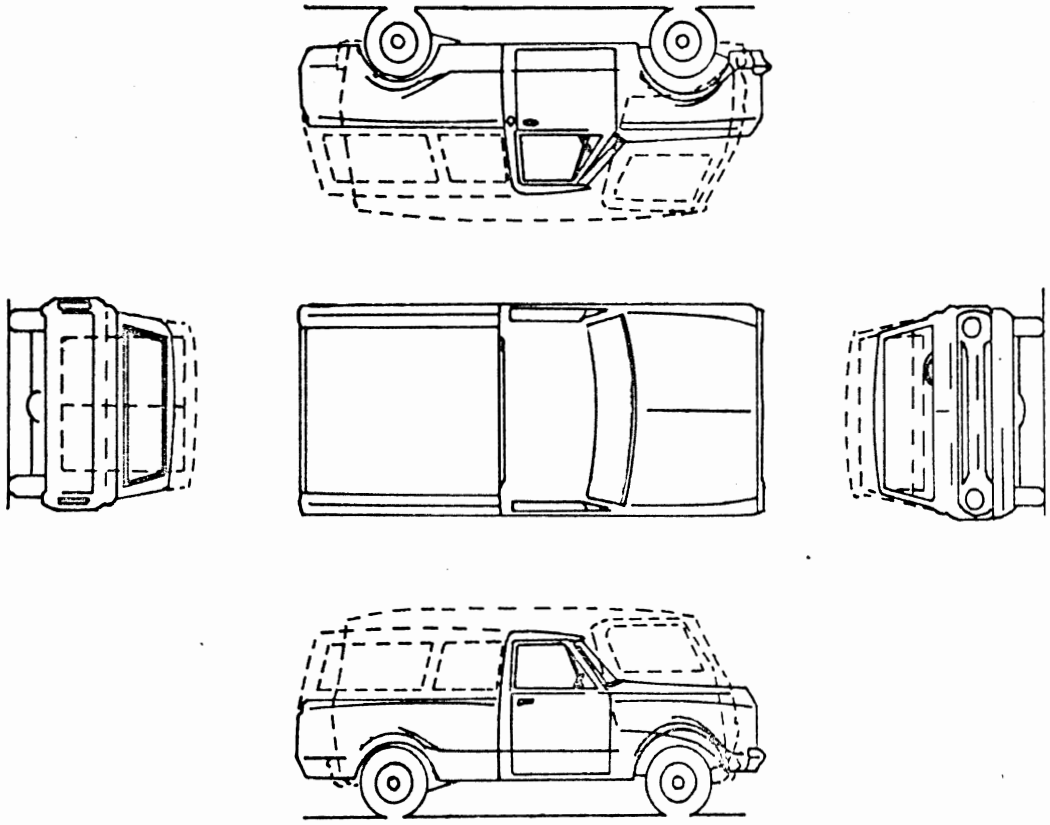
_____

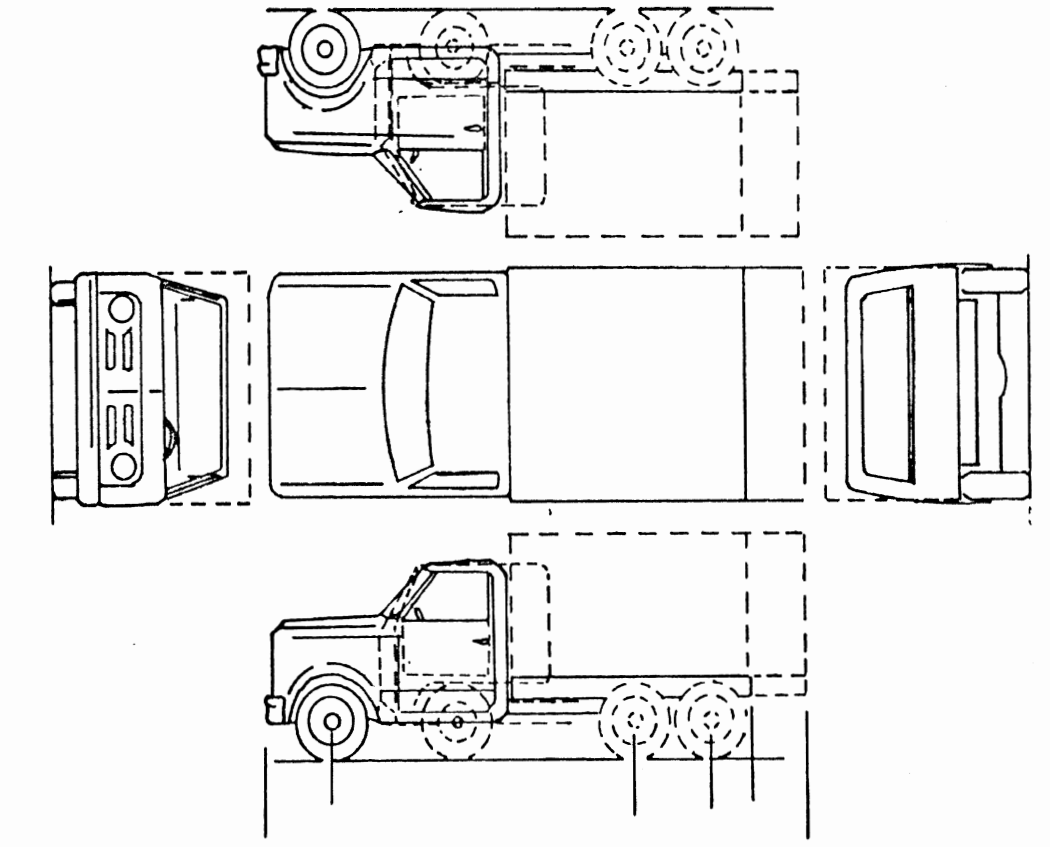
_____

RESTRAINTS

EXTERIOR DAMAGE

(Trucks)





ACCIDENT DATA

Acc. No. _____ A

ADMIN

Accident Number _____ Accident Date ___/___/___

Police Reporting Number _____ Accident Time _____

Location _____ City FIPS Code _____

Investigator _____ Checker _____ Investigation Terminated: A B C D

Entered By _____ Date ___/___/___

SAMPLING

Sample Jurisdiction _____ Selection Code _____

Qualifying Sample Type: Car Lt.-truck Heavy-truck Bus Motorcycle Pedestrian Pedacycle

Traffic Unit:

Model Year: 19___ Anyone in T.U.Transported to Hospital: Y N ?

License Plate No. _____ Vehicle Actually Towed: Y N ?

OVERVIEW

Overall Severity: PD I K ? First Harmful Event _____

Number of Persons Involved: Total _____ Injured _____ Killed _____

Number of Traffic Units Involved: Total _____ Motor Vehicles _____ Case Reports _____

Parked MV _____ Midblock Intersection Other ?; Legally: Y N ?

Unreported ("Phantom") Contact Vehicles: _____ Hit & Run: Y N ?

ROAD

Any Vehicle Leave Roadway: Y N ?

Roadway Involved: Y N ? Site Visit: Y N ?

EMS FIRE

Accident Fire: Precrash Crash Postcrash

Origin _____

EMS Source _____

ACCIDENT ANALYSIS

CAUSAL

Causal Factors

T.U.1 Type ___ _____

Responsibility ___ _____

T.U.2 Type ___ _____

Responsibility ___ _____

T.U.3 Type ___ _____

Responsibility ___ _____

PRECRASH

Most Responsible Vehicle T.U Action _____

Loss of Control: Y N ? Avoidance Maneuvers _____

Second Most Responsible T.U. Action _____

Loss of Control: Y N ? Avoidance Maneuvers _____

Acc. No. _____

E

V

SITE EXAMINATION*

(*For specific vehicle, to be used when on-site examination is indicated.)

ROADWAY

Roadway Type _____ Number Lanes _____

Lane Configuration: 1-way 2-way Divided: Y N ?

Road Character: Straight Curve Level Grade Hillcrest Hill-bottom

Intersection

Other Roadway Type _____ Number Lanes _____

Roadway Design Involvement

Width/Lane Geometry: Y N ? Grade: Y N ? % Curvature: Y N ? Radius

Crown/Cross-Section/Superelevation: Y N ? Narrow Bridge: Y N ?

ROADWAY

ROADSIDE

Median Involvement _____

Roadside Structure or Roadside Hazard Involvement _____

Vehicle Struck Restraining/Dividing Device (type) _____

Roadside Edge Maintenance Involvement _____

Describe: _____

Road Edge Differential (Drop-off): Soft Shoulder _____ Pavement _____

Permanent Shoulder _____ Amount of Differential _____ Maintenance History _____

_____

Fixed Obstacle(s):

Distance from Roadway _____ Narrow Bridge _____

Grade, Roadway to Object ± _____ Size of Object _____

Vehicle Interaction _____

ROADSIDE

NOTES:

Site Photo(s): Y N ?

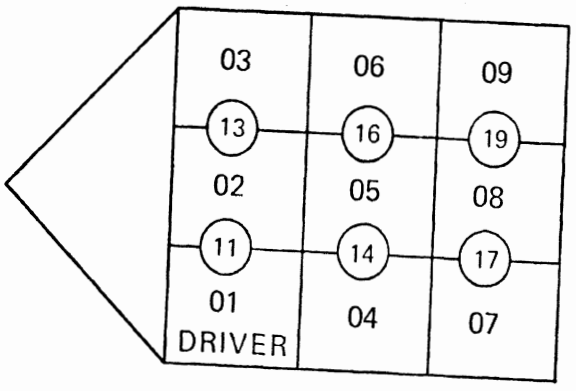
Acc. No. 0

V

OPERATOR

(Driver, Pedestrian, Cyclist)

OCCUPANT SEAT POSITIONS



DRIVER/PEDESTRIAN

Occupant Seat Position Number _____

Occupant Section Sequence Number _____

Weight _____ Height _____

Sex _____ Age _____(months, <2 yrs.)

Posture: Normal _____ Unknown _____

Other _____

Treatment/Mortality _____

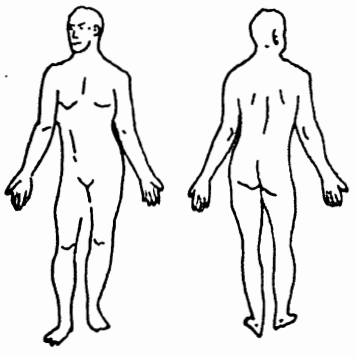
Police K A B C _____

Overall AIS _____

Restraint Usage _____

Defeat _____

OVERALL



Diagnosis/Injuries | Source/Contact Areas

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Ejection: None Partial Complete Portal Area _____ Entrapment _____

INJURIES, DRIVER DATA

Formal Driver Education (Type) _____ Driving, no. yrs. _____ Miles/yr. _____

Case Vehicle Ownership _____ Familiarity with Vehicle _____

Route/Area Familiarity _____

Driving Experience/Familiarity Involvement _____

EXPERIENCE

Trip Origin _____ Destination _____

Purpose _____

TRIP

Violations (this accident) _____

AAMVA Codes _____

CITATIONS

Impairment: Physiological _____

Pharmacological _____ BAC _____

Psychological _____

IMPAIRMENT

Acc. No.

P

V

PASSENGERS

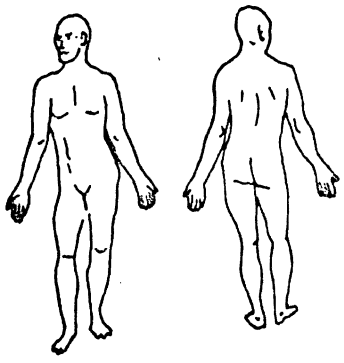
Occupant Seat Position Number _____ Occupant Section Sequence Number _____

Weight _____ Height _____ Sex _____ Age _____ (months, <2 yrs.)

Posture: Normal Unknown Other _____

Treatment/Mortality _____ Police K A B C _____ Overall AIS _____

Restraint Usage _____ Defeat _____



Diagnosis/Injuries	Source/Contact Areas

Ejection: None Partial Complete Portal Area _____ Entrapment _____

PASSENGER

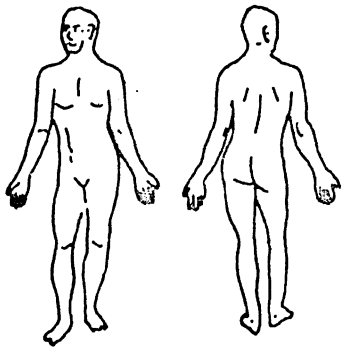
Occupant Seat Position Number _____ Occupant Section Sequence Number _____

Weight _____ Height _____ Sex _____ Age _____ (months, <2 yrs.)

Posture: Normal Unknown Other _____

Treatment/Mortality _____ Police K A B C _____ Overall AIS _____

Restraint Usage _____ Defeat _____



Diagnosis/Injuries	Source/Contact Areas

Ejection: None Partial Complete Portal Area _____ Entrapment _____

PASSENGER

NOTES:

APPENDIX G

FIELD INVESTIGATOR'S CODING MANUAL

Appendix F contains the field investigator's data forms, which are to be used for note taking in the field in preparation for entering case information into a computer file. This appendix presents the coding manual associated with these forms, and defines the valid responses for each data element.

It does not represent a field investigative protocol document, but would be useful as an adjunct for training courses in which such protocol was taught.

GENERAL INSTRUCTIONS

I. Use the following five modules to report investigations:

Modules

A Accident Module

Complete one per accident.

V Traffic Unit Module (Vehicle Visit)

Complete one for every traffic unit in accident.

E Site Examination Module

Complete one for each traffic unit for which site examination is indicated.

O Operator Module (Driver Interview)

Complete one for every traffic unit in accident.

P Passenger Module

Complete for every passenger (non-operator) in each traffic unit. Each P module accomodates two passengers.

II. Standard Abbreviated Responses

UNK, ? - "Unknown" stated by investigator.

N/A, / - "Not/Applicable"

* - Default value, as defined for each question.

III. Involvement

The term "Involvement" throughout the NASS Modules should be interpreted as follows:

"Was this factor involved in causing or increasing the potential severity of the accident?"

IV. Standard Responses

The following pages detail the standard responses for each NASS report module. The module letters are repeated in the upper right of each page and each specific block of questions is titled in the outside margin in the same location as the field report module. The sequence of individual questions in each block is

repeated here. The individual questions are numbered within each module for ease of reference.

All the full responses to each question are listed. Accepted abbreviated responses for each category are underlined or prefixed in parentheses. Code numbers must be entered for responses that are not underlined.

TRAFFIC ACCIDENT - Administrative

1. Accident Number

   Enter team case log number

2. Police Reporting Number

   Enter police report log number

3. Accident Date

   Enter two digits each, for accident month, day, and year, in that order.

4. Accident Time

   Enter two digits each, for the accident hour and minutes using a 24:00 hour clock.

5. City FIPS Code

   Enter the four digit FIPS code for the accident city, (9999) is unknown."

6. Investigator, checker, Entered by

   Enter initials of first, middle and last name. (?) is "unknown."

7. Entered Date

   Enter two digits each for the month, day, and year in which case data for this accident was first entered.

8. Investigation Terminated

   A - Investigation complete, data complete

   B - Investigation, data incomplete

   C - Investigation incomplete, could not be investigated

   D - Investigation incomplete, did not meet criteria

TRAFFIC ACCIDENT - Sample

9. Sample Jurisdiction

   Enter sample jurisdiction number

10. Selection Code

Enter selection code number

11. Qualifying Traffic Unit Type

Automobile (includes pickup-car, e.g., ranchero)

Light truck (includes pickup, small/sport van, "carryall," and "Jeep" type utility vehicle)

Heavy truck (includes chassis-mounted camper, and large delivery van)

Bus (includes school, intercity, and intracity)

Motorcycle (any size, 2 or 3 wheels)

Special purpose vehicle (includes snowmobile, ATV, amphibious, farm, or construction vehicle, private or commercial trailer, train cars, locomotive or switcher)

Pedestrian - on ground or on conveyance other than pedalcycle (e.g., skateboard, horse)

Cyclist/pedalcyclist

Other

12. Qualifying Traffic Unit Model Year

Enter two digits for vehicle model year or pedestrian (pedalcyclist) birth year, use (98) for "not applicable" (e.g., birth year 1897) and (99) for "unknown."

13. Qualifying Traffic Unit License Plate Number

Enter full vehicle license plate number. Use "NA" for "not applicable" and (unknown) for "Unknown."

14. Anyone Transported to Hospital: Y N ?

15. Vehicle Actually Towed: Y N ? N/A

TRAFFIC ACCIDENT - Overview 1

16. Overall Severity

Enter highest severity in accident

Property damage only

Injury (ABC) and no fatalities

K, Fatalities, any

Unknown

17. First Harmful Event (Both Code and Alphabetic Response Accepted)

(10) Non-Collision, Unknown Type

(11) Overturn
(12) Fire/explosion
(13) Immersion
(14) Jackknifed
(15) Gas Inhalation
(16) Ejected Person
(17) Injured Person
(19) Other: _____

Collision with:

(21) Pedestrian
(22) Pedalcycle
(23) Railway Train
(24) Animal
(50) Motor Vehicle in Transit, Unknown Configuration

(51) Head-on
(52) Rear-end
(53) Angle
(54) Sideswipe

(60) Part of Vehicle
(70) Parked Motor Vehicle
(80) Fixed Object, Unknown Type

(81) Building
(82) Curb or Wall (not Building)
(83) Ditch
(84) Divider (incl. islands but not guard rails)
(85) Embankment
(86) Pier, Pillar, Abutment
(87) Guard Rail, Bridge Rail, Sides
(88) Pole, Tree, Sign Post
(90) Object Other: _____

(99) Unknown

TRAFFIC ACCIDENT - Overview 2

18. Number Persons: Total

Enter total number of persons in accident

19. Number Persons Injured

Enter total number injured but not killed in accident

20. Number Persons Killed

Enter total number killed in crash and postcrash phase. Pre-crash fatalities (e.g., heart failure) do not count.

21. Number Traffic Units, Motor Vehicle

Enter total number of traffic units and motor vehicles in accident.

22. Number of Case Reports

Enter total number of case reports completed and to be completed in accident. Computer will query _____ for exactly this many traffic unit modules.

23. Number Parked Motor Vehicles

Enter total number of parked motor vehicles contacted during the crash.

24. Parked Vehicle Location

Midblock

Intersection

Other

Unknown

N/A

?

25. Legally Parked Car: Y N ? N/A

26. Number Unreported ("Phantom") Contact Vehicles

Enter number of unreported ("Phantom") vehicles in accident

27. Hit & Run: Y N ?

TRAFFIC ACCIDENT - Road/Fire

28. Any Vehicle Leave Roadway: Y N ?

Complete "Site Examination" Module E for each vehicle that leaves the roadway.

29. Roadway Involved: Y N ?

See General Instructions Section III for interpretation of "Involvement."

30. Site Visit: Y N ?

Complete a "Site Examination" (Module E) for each case vehicle indicated.

31. Accident Fire

Enter any fire in accident

Precrash

Crash

Postcrash

None

32. Fire Origin

Fuel from vehicle

Cargo

Vehicle other

Other than vehicle or cargo

N/A

33. EMS Source

Police department

Fire department

EMS department

Commercial ambulance

Individual (e.g., relative)

None, no EMS

?

ACCIDENT ANALYSIS - CAUSAL-1

34. Traffic Unit 1, Type

Automobile	Special Purpose Vehicle
Light Truck	Pedestrian
Heavy Truck	Cyclist/Pedalcyclist
Bus	Other
Motorcycle	?

35. Traffic Unit 1, Responsibility

Enter numeric code.

(1) Most Responsible	(6) Sixth Most Responsible
(2) Second Most Responsible	(7) Seventh Most Responsible
(3) Third Most Responsible	(8) Eighth or more Most Responsible
(4) Fourth Most Responsible	(9) Unknown
(5) Fifth Most Responsible	

36. Traffic Unit 1, Causal Factors

Enter up to six specific causal factor codes from list on following page.

ACCIDENT CAUSATION FACTOR

Human Factors

Human Factor, type unknown
Critical non-performance, type unknown
Blackout
Seizure
Sleeping
Pre-crash fatality
Other critical non-performance: _____
Drunk driving, drinking involved, drugs or medication
Stress, type unknown
Long term stress
Situational stress; argument, stress in traffic situation
Other stressors
Preoccupation
Inattention
Distracted or diverted attention
Non-accident, type unknown
Definite attempted suicide
Probable attempted suicide
Possible attempted suicide
Intentional collision
Other non-accident _____
Perception, comprehension, recognition error, type unknown
Failure to see sign or signal
Failure to see pedestrian or cyclist
"Improper lookout", failure to see other vehicle
Other Perception, Recognition error: _____
Driver decision, performance error, type unknown
Inexperienced driving, erratic driving
Misjudgment (of distance, change rate, etc.)
False assumption (about other vehicle, trafficway)
Excessive speed or acceleration
Following too closely
Failure to yield right of way
Sign, Signal disobeyed
Improper or inadequate turn
Improper or inadequate overtaking
Wrong way into oncoming traffic
Inadequate signal, horn, or lights
Improper avoidance maneuver (e.g., locked brakes)
Overcompensation
Other driver decision, performance error: _____

Vehicle Factors

Vehicle factor, type unknown
Tires and wheels
Brake system
Steering system
Suspension system
Fuel system, power train and exhaust
Communications system (windows, lights, horn, signals)
Ergonomic and anthropomorphic factors (driver seating, suitability of controls)
Vehicle dimensions, body weight, doors, hitch or attachments
Other vehicle factor: _____ (includes occupant restraint system)

Environmental Factors (trafficway and ambience)

Trafficway factor, type unknown
Roadway geometrics (width, lanes, grade, curvature, crown, crossection, superelevation)
Roadway surface material/condition/covering/traction
Traffic flow
Intersection design
Median or roadside features
Signs, signals, markings
Visibility limitation (e.g., fog) or illumination problem)
Traffic spray
Wind
Other weather factor
Pedestrian or pedalcyclist error
Non-contact vehicle
Other ambience factor: _____

37. Traffic Unit 2, Type/Responsibility/Causal Factors

See items 34-36 above

38. Traffic Unit 3, Type/Responsibility/Causal Factors

See items 34-36 above

ACCIDENT ANALYSIS - Precrash

39. Most Responsible TU action - use code numbers

Vehicle:

(01) Going Straight ahead
(02) Curve following
(03) Making right turn
(04) Making left turn
(05) Making U turn
(06) Starting from parking
(07) Starting in traffic
(08) Slowed or Stopping
(09) Stopped in Traffic
(10) Entering parked position
(11) Parked
(12) Avoiding object in road
(13) Skidding
(14) Changing lanes
(15) Overtaking
(16) Merging
(17) Backing
(18) Other

Pedestrian:

(21) Crossing, with signal
(22) Crossing, against signal
(23) Crossing, no signal, marked crosswalk
(24) Crossing, no signal or crosswalk
(25) Along road with traffic
(26) Along road against traffic
(27) Behind parked car
(28) Child getting on/off School Bus
(29) Getting on/off vehicle
(30) Pushing/working on car
(31) Working in road
(32) Other actions in road
(33) Not in roadway
(99) Unknown

40. Most Responsible TU Loss of Control: Y N ?

41. Most Responsible TU Avoidance Maneuvers:

Describe the action deliberately taken by the driver to try to avoid or reduce the severity of the accident.

None
Braking
Steering.
Combined braking and steering
Acceleration
Joint acceleration and steering
Release of brake
Deceleration (e.g., engine braking)
Other: _____
Unknown

42. Second Most Responsible TU, Action/Loss of Control/ Avoidance Maneuvers

See items 39 through 41 or use * for N/A

TRAFFIC UNIT INVESTIGATION - Identification-1

Documentation:

1. Vehicle Visits: Y N ?

2. Vehicle Photos: Y N ?

3. Interviews: Y N ?

4. Interviews: Y N ?

5. Driver Record: Y N ?

6. Traffic Unit Make Code

Enter three digit make code for country, corporation, and division (ABC)

Country, Corporation, Division (abc)

1	USA
11	General Motors Corp.
111	Buick
112	Cadillac
113	Chevrolet
114	Oldsmobile
115	Pontiac
116	GMC Truck and Coach
117	GMC Electromotive
12	Ford Motor Co.
121	Ford
122	Lincoln-Mercury
13	Chrysler Corp.
131	Chrysler
132	Dodge
133	Imperial
134	Plymouth
135	DeSoto
14	American Motors Corp.
141	American Motors
15	Other USA Corporations
151	Checker
152	Kaiser-Jeep
153	International
154	Studebaker/Avanti
155	Harley-Davidson
156	General Vehicles Corp. (Bricklin)
16	USA Truck Corp.
160	USA Truck Corp. Unknown
161	Brockway
162	Diamond-Reo
163	FWD
164	Kenworth
165	Mack
166	Peterbilt
167	White (Autocar, Freight Liner)
168	Other USA Truck Corp.
170	Unknown/Other USA Manufacturer of Special Purpose Vehicle
171	Flexible
172	Fruehauf
191	Male Pedestrian/bicyclist
192	Female Ped./bicyclist
2	Canada
21	GM Canada*
213	Chevrolet*
214	Oldsmobile*
215	Pontiac*
22	Ford Canada*
222	Lincoln-Mercury
3	Australia
317	GM (Holden)*
4	England
419	GM Vauxhall*
42	Ford England*
434	Plymouth (Cricket)*
45	British Leyland
451	Austin
452	Austin Healy
453	MG
454	Morris
455	Jaguar
456	Triumph
46	Rootes
482	Lotus Elan
484	Rolls Royce
488	Rover
5	France
531	Chrysler (Simca)*
551	Citroen
561	Renault
571	Peugeot
6	Germany
618	GM (Opel)*
622	Ford (Capri)*
651	Mercedes Benz
661	Volkswagen
662	Porsche
671	BMW
681	Audi
7	Italy
722	Ford of Italy*
751	Alfa-Romeo
761	Fiat
771	Ferrari
8	Japan
818	Chevrolet-Isuzu (LUV Pickup)*
832	Dodge-Mitsubishi (Colt)*
851	Toyo (Mazda)
861	Nissan (Datsun)
871	Toyota
881	Honda
882	Fuji Heavy Ind. (Subaru)
883	Suzuki
884	Kawasaki
885	Yamaha
9	Other Foreign
951	Saab (Sweden)
952	Volvo (Sweden)
000	Unknown, Missing data

*Corporation codes 1-4 are always the same from country to country, e.g., 12 = USA/Ford and 42 = England/Ford. Codes 5-9 have different definitions in each country.

7. Traffic Unit Model Code

Enter two digit model code (DE)

MODEL TYPE (de)

Passenger Cars

01 Intermediate (GM A Body)
02 Standard/Full Size (B Body)
03 Luxury (C Body) or Limousine (D Body)
04 Mini Specialty (Mustang II)
05 Personal Luxury (E Body)
06 Specialty/Pony (F Body)
07 Specialty Intermediate (A SP Body)
08 Compact (X Body & Y Body)
09 Sub-compact/Mini-Imported (VW)
10 Super Sport (Corvette)
17 Pickup-Car (Ranchero)
18 Sub-compact/Mini-USA (H Body)
19 Foreign Sports Car (MG)
20 Unknown Automobile Body

Size	Standard	Specialty	Sports
Mini	09,18	04	19
Compact	08	06	10
Intermediate	01,17	07	--
Standard	02	05	--
Luxury/Limo	03	--	--

Multipurpose Passenger Vehicle

14 Utility (jeep, Bronco)
15 Carryall/Panel Truck
16 Pickup Truck w/Canopy/Shell Cover
17 Pickup-Car (Ranchero)
21 Motor Home
22 Pickup Truck w/Slide-in Camper
23 Pickup-Car w/Slide-in Camper
31 Chassis-Mounted Camper

Trucks

11 Small Van (Econoline)
12 Pickup
13 Unknown light truck (<1-1/2 Ton)
15 Carryall/Panel Truck
16 Pickup Truck w/Canopy/Shell Cover
22 Pickup Truck w/Slide-in Camper
30 Unknown Truck Type
31 Chassis-Mounted Camper
33 Delivery Van (Walk-in)
34 Straight Truck
35 Truck-Tractor
36 Chassis-Cab
37 Unknown Heavy Truck (>1-1/2 Ton)
38 Tractor + Semi-Trailer (Semi)
39 Truck (or Semi) + Full Trailer(s)

Buses

40 Unknown Bus Type
41 School Bus
42 Inter City (between)
43 Intra City (within)
44 Streetcar (on tracks)

Motorcycles

50 Unknown Motorcycle Type
51 1-75cc
52 76-125cc
53 126-250cc
54 251-500cc
55 501-750cc
56 751+cc
57 3-wheels (or w/Sidecar)

Special Purpose Vehicles

60 Unknown/Other Special
61 Snowmobile
62 ATV, All Terrain Vehicle
63 Amphibious Vehicle
64 Farm Vehicles
65 Construction Vehicles
66 Trailer-Private (camper)
67 Trailer-Commercial (cargo)
68 Train (cars)
69 Locomotive, Switcher

Miscellaneous Model Types

70 Pedestrian
71 Bicyclist, Other Pedalcycle
72 Pedestrian Conveyance (e.g., Person riding animal or in cart)

98 Other Model Type
00 Unknown Model Type

8. Model Year

Enter two digits for model year of traffic unit. Use birth year for pedestrians and pedalcyclists. Use (98) for "Not applicable" (e.g., 1897) and (99) for "Unknown."

9. Estimated Weight

Enter estimated weight, including cargo and excluding occupants.

10. Body Style

Enter two digit code

(99) Unknown Vehicle Type

Passenger Vehicle Body

(01) 2-Door Hardtop (No Upper B Pillar)
(02) 2-Door Sedan or Coupe (Any Upper B)
(03) 4-Door Hardtop
(04) 4-Door Sedan
(05) Station Wagon or Pickup Car
(06) Convertible - Soft or Hard Shell

Small Truck Body

(09) Delivery Van (Walk-in)
(11) Van (Not Walk-in)
(12) Pickup
(13) Unknown Light Truck (<1-1/2 Ton)
(14) Chassis-Mounted Camper
(15) Slide-in Camper
(16) Pickup-Camper (Canopy, Shell)
(17) Carryall/Panel Truck

Large Truck Body

(20) Van/Box (Straight or Semi)
(21) Motor Home
(22) Platform, Flatbed
(23) Stake Rack
(24) Dump
(25) Hopper
(26) Tank
(27) Transit Mix, Mixer
(28) Pole (Log)
(29) Fire
(30) Wrecker, Towing
(31) Garbage, Refuse
(32) Crane/Cherry Picker
(33) Auto Carrier
(34) Straight Truck, Unknown Body
(35) Truck-Tractor
(36) Chassis Cab
(37) Unknown Heavy Truck (>1-1/2 Ton)
(38) Tractor + Semi-Trailer (Semi), Unknown Body
(39) Truck (or Semi) + Full Trailer(s), Unknown Body

Bus or Motorcycle

(40) Bus
(50) Motorcycle

Special Purpose Vehicles

(60) Unknown/Other Special Purpose Vehicles
(61) Snowmobile
(62) ATV, All Terrain Vehicle
(63) Amphibious Vehicle
(64) Farm Vehicles
(65) Construction Vehicles
(66) Trailer - Private (Camper)
(67) Trailer - Commercial (Cargo)
(68) Train (Cars)
(69) Locomotive - Switcher

Other Traffic Unit Type

(70) Pedestrian
(71) Pedalcycle
(72) Ped. Conveyance (Person on Animal, in Cart, etc.)

(98) Other:

TRAFFIC UNIT INVESTIGATION - Identification-4

11. Vehicle Identification Number - VIN

Enter vehicle VIN

12. Traffic Unit Function

Private	Other
Commercial	Unknown
Government	
Military	

13. Truck Cargo

None	Solids (steel, brick, etc.)
Dry freight	Other: _____
Granular bulk	Type unknown
Liquid bulk	
Gaseous	

14. Truck Cargo Hazard Class

None/not applicable	Acids, caustics
Hazardless (non-flammable)	Other: _____
Flammable	
Explosive	

15. Truck Gross Vehicle Weight (GVW)

Enter GVW

16. Truck Axles

Enter truck axle combination, e.g. 2x4 (?)

17. Tractor Wheels

Enter tractor wheel combination, e.g., 2x4 (?)

18. Trailer Being Towed at Time of Collision

Yes, type unknown	Rental/cargo trailer
No	Commercial trailer
Travel Trailer/Camper	Automobile
Mobile Home	Other: _____
Boat/snowmobile/ATV trailer	?

19. Commercial Trailer Length

Enter approximate length, e.g., 27, 40-

20. Trailer Jacknifed/Separated

Neither	Both
Jacknifed	?
Separated	

TRAFFIC UNIT INVESTIGATION - Tires
[* defaults to N/A for questions 21 through 24]

21. Front Tread Type

Regular
Non-studded snow
Studded snow
Flat, "Slick"
Different on left and right
Other
?

22. Front Tread Wear

Light	Medium
Heavy	Bald
Different on Left & Right	Other
	?

23. Front Tire Involvement: Y N ?

24. Rear Tire Type/Wear/Involvement

See items 21 through 23 above

TRAFFIC UNIT INVESTIGATION - Exterior Damage
[* defaults to N/A for questions 25 through 44.]

25. Doors Opened - FR, FL, RL, RR: Y N ?

26. Door Latches Separated - FR, FL, RL, RR: Y N ?

27. Door Hinges Separated - FR, FL, RL, RR: Y N ?

28. Door Other Involvement: Y N ?

29. Hood Contact Windshield: Y N ?

30. Hood Penetrate Windshield: Y N ?

31. Hood Latch Release: Y N ?

32. Hood Latch Damaged: Y N ?

33. Windshield Damage

None
Cracked
Broken and cracked (interlayer torn)
?

34. Windshield Tinted: Y N ?

35. Windshield Bond Separation: Y N ?

36. Windshield Occupant Contact: Y N ?

37. Fuel Leakage, Tank: Y N ?

38. Fuel Leakage, Neck: Y N ?

39. Fuel Leakage, Lines: Y N ?

40. Fuel Leakage, Engine: Y N ?

41. Case Vehicle Origin

No case vehicle fire
Fuel from case vehicle
Other from case vehicle
Elsewhere (e.g., other vehicle)
?

42. Case Vehicle Fire Extent

No fire
Minor - easily extinguished
Extensive - e.g., entire interior or engine
?

43. Door Beam Present: Y N ?

44. Door Beam Role

None or not applicable
Contact only
Damaged (e.g., bent), no or unknown separation
Separation and damage
? - Unknown role

TRAFFIC UNIT INVESTIGATION - CDC, Speed
[* defaults to N/A for questions 45-54.]

45. Primary Collision Damage Classification (CDC)

Enter primary CDC (Clock direction, four letters, & extent code) according to SAE J224a.

46. Primary Inches of Crush

Primary inches of crush from plane of first CDC letter. Use (99) for "Unknown."

47. Primary Collision Configuration

Head-on	T-type intersection
Rear-end	Fixed object
Angle	Other
Sideswipe	?
L-type intersection	

48. Primary Object Contacted

Enter code from list on following page

49. Primary Event Number

Enter event number of primary damage

50. Secondary CDC, Crush, Collision, Object, Event

See questions 45 through 49 above

51. Tertiary CDC, Crush, Collision, Object, Event

See questions 45 through 49 above

52. Vehicle Speed Estimate - Precrash/First Impact

Enter the best estimate of both the precrash and first impact speeds followed by a confidence range, e.g., 25 mph. ± 5 mph.

54. Speed Estimate Source/Basis

Investigator
Police
Driver
Witness/Passenger
Other
N/A

TRAFFIC UNIT INVESTIGATION - Interior
[* defaults to N/A for questions 55-64.]

55. Odometer

Enter odometer reading

56. Passenger Compartment Reduced in Size: Y N ?

57. External Object Intrusion: Y N ?

58. Continuity of Side Structure Maintained: Left: Y N ?
Right: Y N ?

59. Shear Capsule Separation: Y N ?

60. Head Restraints Equipped: Y N ?

61. Head Restraints Damaged: Y N ?

62. Front Seats: Bench Bucket ?

63. Front Seat Damage

Adjuster damage	None
Separation of Seat	?
Rotation or Damage of seat back	
Both R and (A or S)	

64. Restraints Equipped - FL, FC, FR, RL, RC, RR

None	Child restraint
Lap Only	Air Cushion restraint system
Full lap & torso	?
Other	

65. Restraints Defected/Malfunctioned - FL, FC, FR, RL, RC, RR

Enter responses as above * = None

OPERATOR - Seating
[skip questions 1-35 for vehicle with no driver]

1. Seat Position Number

   Enter a seat position number of (1) (* default value) for operator (driver, pedestrian, cyclist) unless in a different position.

2. Occupant Section Sequence Number

   Enter a sequence number of (1) (* default value) for operator.

3. Operator Weight

   Enter weight in pounds.

4. Operator Height

   Enter in feet and inches (e.g., 5' 10") or as total inches (e.g., 70").

5. Operator Sex: Male Female ?

6. Operator Age in Years

   Enter age in years, with (99) as "Unknown."

7. Operator Posture: Normal Other ?

8. Operator Treatment/Mortality

   Enter code of highest applicable value

   (00) None
   (01) Left scene of accident
   (02) First aid at scene
   (03) Physician consultation
   (04) Treated at hospital/clinic but not admitted
   (05) Hospitalized (observation less than 24 hours)
   (06) Hospitalized for over 24 hours or significant treatment
   (10) Fatal - dead at scene
   (11) Fatal - DOA
   (12) Fatal - dead within 24 hours
   (13) Fatal - dead 24 hours - 1 year
   (14) Fatal - dead, period unknown
   (99) Unknown

9. Operator Police Injury Code: K A B C O ?

10. Operator Overall AIS Code

(0) None	(5) Dangerous, serious
(1) Minor	(6) Maximum
(2) Non-dangerous, moderate	(8) Injury Unknown
(3) Non-dangerous, severe	(9) Injured, severity unknown
(4) Dangerous, serious	

11. Restraint Usage

None	Air Cushion Restraint System
Lap	Other
Full lap & torso	?
Child restraint	

12. Restraint Defect: Y N ?

OPERATOR - Injuries, Experience
INJURIES

13. Operator Contact Areas and Injuries

Enter occupant contact area codes and up to 3 OIC's for each injury. Up to 10 injuries may be entered. The * defaults to "no contact" and "no injury." Contact area and OIC codes on next page.

14. Operator Ejection: None Partial Complete ?

15. Operator Ejection Portal

Windshield	Roof or Open Convertible
Side Window	?
Tailgate or Rear Window	N/A
Door	

16. Operator Entrapment: Y N ?

17. Formal Driver Education

None, informal	Professional
High School	Other: _____
Commercial	Yes, unknown source
Military	?

18. Numbers of Years Driving

Enter number of years

19. Miles Driven per Year

Enter miles driven per year

20. Case Vehicle Ownership

21. Ownership of Case Vehicle

Case vehicle driver	Public or police vehicles
Relative	Rented vehicle
Friend	Other (e.g., empty, stolen)
Business or Company veh.	?

22. Operator Familiarity with Vehicle: Y N ?

23. Operator Route/Area Familiarity: Y N ?

24. Driving experience/Familiarity Involvement: Y N ?

OPERATOR - Trip, Citations

25. Trip Origin

Home	Bar/Cocktail Lounge/Wet Party
Work	Church
Shopping	Education/School
Recreation	Other
Friend/Relatives	?

26. Trip - Destination

Commuting to/from work/school

Business trip, on the job, sales call

Shopping, errands

Visit to friends or relatives, social

Recreation to/from facility (movie, picnic)

Transporting, pick up/dropping off passengers (e.g., children at school)

Pleasure ride, no particular reason

Other

28. Violations Committed During this Accident AAMVA Codes)

Violation, but type unknown
No Violation
(AC) Accident - Negligent Collision
(DE) Defective equipment
(DI) Driving while intoxicated
(DS) Disability
(EM) Equipment Misuse
(ER) Equipment Regulations

(FA) Fatality
(FE) Felony
(FO) Following improperly
(FR) Financial Responsibility
(HR) Hit and Run
(IL) Improper Lane
(LI) Littering
(MR) Misrepresentation
(MS) Miscellaneous
(PA) Passing
(PE) Pedestrian Violation
(RK) Reckless, careless or negligent driving
(RR) Required report, appearances or documents
(RT) Registration and Titling
(RV) Repeated Violations
(RW) Right of Way
(SC) Signs and Control Devices
(SI) Signalling Intentions
(SP) Speeding
(TU) Turns
(VR) Violation of restriction licensing requirements
(WW) Wrong-way, side or direction
?

OPERATOR - Impairment
[* defaults to no impairment for questions 29-35.]

Physiological Factors

29. Permanent Physiological Conditions

None
Infirmities (arthritis, senility, etc.)
Diabetes
Brain (epilepsy, stroke)
Cardio-vascular (heart failure, angina, infection)
Vision/hearing restricted
Respiratory condition
Paraplegic, amputee
Other: _____
?

30. Transient Physiological Condition

None
Blackouts
Dozing
Fatigue

Drunk

Alcohol involved

Medication or drug

Flu, headcold, etc.

Fractured member

Pregnancy

Hangover

Corrective lenses not worn

Hypoglycemia

Other: _____

?

31. Physiological State Involvement: Y N ?

32. Pharmacological Agents Noted

Noted, but not necessarily causal

(0) None noted

(1) Yes, unknown or other: _____

(2) Stimulants, prescriptive/narcotics (amphetamines, cocaine, bennies)

(3) Stimulants, over-the-counter (caffiene, "no-doz")

(4) Depressants, prescriptive/narcotics (barbituates, opiates, tranquilizers)

(5) Depressants, over-the-counter (alcohol, sleeping compounds)

(6) Antihistamines

(7) Hallucinogens (LSD, DMT, mescaline, psilocybin)

(8) Marijuana

(9) Unknown

33. Pharmacological Factors Involvement: Y N ?

34. Psychological Stress Possible Involved

Enter code values

(01) Stress, but type unknown

(02) No stress documented

Problems

(11) Loss of friend or relative

(12) Marital/sex difficulty

(13) Financial difficulty

(14) School/work problems

(15) Legal/police/social/counselor problems

(19) Several of the above

Argument

(21) Argument with relations or friends

(22) Argument with boss or co-workers

(23) Argument with others (sales clerk)

Other Stress

(31) Situational anxiety (e.g., hurry to reach destination)

(41) Suicide/homocide intent

(98) Other: _____

(99) Unknown

35. Psychological State Involvement: Y N ?

PASSENGERS

1. Passenger Seat Position Number

Enter seat position according to report form diagram. If two people occupy the same seat (i.e., sitting on a lap, etc.) replace the 0 in the seat number with a 2 to identify the person sitting on the lap of the other occupant.

2. Occupant Section Sequence Number

Sequentially number each occupant in vehicle starting with driver (operator module).

3. Passenger Weight, Height, Sex

Enter as in operator module.

4. Passenger Age in Years

Enter age in years with (99) for "Unknown."

5. Passenger Age in Months (if under 2 years)

Enter age in months if less than 24 months. Otherwise default (*) to N/A.

6. Passenger Posture, Treatment/Mortality: K A B C, AIS, Restraints

Enter as on operator module

7. Passenger Contact Areas and Injuries

Enter as on operator module

8. Passenger Ejection, Portal, Entrapment

Enter as on operator module

SITE EXAMINATION - Roadway

[Answer questions with respect to approach roadway of case vehicle to point of accident.]

1. Roadway Type

Freeway, Expressway, Parkway
(Fully controlled access, divided, 4 or more lane highway)

Arterial Highway

Collector, Thru Street

Local street

Service, Access, Frontage Road

Entrance, exit ramp

Non-roadway area (e.g., parking lot, driveway)

?

2. Accident Site

Open road

Midblock (between intersections marked with sign or signals)

Intersection (Interchange thru land)

Railroad crossing

Entrance, exit ramp

Acceleration, deceleration lane

Bridge, tunnel, viaduct

Other: _____

?

3. Road Total Traffic Lanes (enter codes)

(1) 1-lane
(2) 2-lane
(3) 3-lane
(4) 4-lanes
(5) 5-lanes
(6) 6-lanes
(7) 7-lanes or more lanes
(8) Non-roadway area
(9) ?

4. Lane Configuration (enter code or alphabetic response)
   (1) One-way
   (2) Two-way
   (?) Unknown

5. Lanes Divided: Y N ?

6. Road Character A: Straight Curved ?

7. Road Character B: Level Grade ?

8. Road Character C: Crest Bottom of Hill ?

9. Intersecting Roadway Type/Lanes
   See questions 1 and 3 above

10. Involvement of width/Lane Geometry: Y N ?

11. Involvement of Grade: Y N ?

12. Involvement of Curvature: Y N ?

13. Involvement of Crown/Cross-Section/Superelevation: Y N ?

14. Involvement of Narrow Bridge: Y N ?

SITE EXAMINATION - Roadside

15. Median Involvement: Y N ?

16. Roadside Structure or Roadside Hazard Involvement: Y N ?

17. Vehicle Struck Restraining/Dividing Device Type

Yes, type unknown	Bridge rail
No, did not strike restraining/guiding device	Median barrier
Guardrail	Impact Attenuator
	Other
	?

18. Roadside Edge Maintenance Involvement: Y N ?

19. Road Edge Differential (drop-off): Y N ?

20. Road Edge Sift Shoulder: Y N ?

21. Road Edge Cement: Y N ?

22. Road Edge Permanent Shoulder: Y N ?

23. Road Edge Amount of Differential
Enter differential in inches.

24. Road Edge Maintenance History: Y N ?

25. Fixed Obstacle - Distance from Roadway (enter feet)

26. Narrow Bridge Involvement: Y N ?

27. Fixed Obstacle - Grade to Object (enter grade)

28. Fixed Obstacle - Size (enter feet)

29. Vehicle Interaction

Reflected (or rebounded)	Impaled by
Went over	Top, remained on
Crashed through	Other
Stopped	?
Rotated around	

30. Site Photographs: Y N ?

Passenger Vehicle Body

(01) 2-Door Hardtop (No Upper B Pillar)
(02) 2-Door Sedan or Coupe (Any Upper B)
(03) 4-Door Hardtop
(04) 4-Door Sedan
(05) Station Wagon or Pickup Car
(06) Convertible - Soft or Hard Shell

Small Truck Body

(09) Delivery Van (Walk-in)
(11) Van (Not Walk-in)
(12) Pickup
(13) Unknown Light Truck (<1-1/2 Ton)
(14) Chassis-Mounted Camper
(15) Slide-in Camper
(16) Pickup-Camper (Canopy, Shell)
(17) Carryall/Panel Truck

Large Truck Body

(20) Van/Box (Straight or Semi)
(21) Motor Home
(22) Platform, Flatbed
(23) Stake Rack
(24) Dump
(25) Hopper
(26) Tank
(27) Transit Mix, Mixer
(28) Pole (Log)
(29) Fire
(30) Wrecker, Towing
(31) Garbage, Refuse
(32) Crane/Cherry Picker
(33) Auto Carrier
(34) Straight Truck, Unknown Body
(35) Truck-Tractor
(36) Chassis Cab
(37) Unknown Heavy Truck (>1-1/2 Ton)
(38) Tractor + Semi-Trailer (Semi), Unknown Body
(39) Truck (or Semi) + Full Trailer(s), Unknown Body

Bus or Motorcycle

(40) Bus
(50) Motorcycle

Special Purpose Vehicles

(60) Unknown/Other Special Purpose Vehicles
(61) Snowmobile
(62) ATV, All Terrain Vehicle
(63) Amphibious Vehicle
(64) Farm Vehicles
(65) Construction Vehicles
(66) Trailer - Private (Camper)
(67) Trailer - Commercial (Cargo)
(68) Train (Cars)
(69) Locomotive - Switcher

Other Traffic Unit Type

(70) Pedestrian
(71) Pedalcycle
(72) Ped. Conveyance (Person on Animal, in Cart, etc.)

(98) Other:

ACCIDENT CAUSATION FACTOR

Human Factors

Human Factor, type unknown
Critical non-performance, type unknown
Blackout
Seizure
Sleeping
Pre-crash fatality
Other critical non-performance: _____
Drunk driving, drinking involved, drugs or medication
Stress, type unknown
Long term stress
Situational stress; argument, stress in traffic situation
Other stressors
Preoccupation
Inattention
Distracted or diverted attention
Non-accident, type unknown
Definite attempted suicide
Probable attempted suicide
Possible attempted suicide
Intentional collision
Other non-accident _____
Perception, comprehension, recognition error, type unknown
Failure to see sign or signal
Failure to see pedestrian or cyclist
"Improper lookout", failure to see other vehicle
Other Perception, Recognition error: _____
Driver decision, performance error, type unknown
Inexperienced driving, erratic driving
Misjudgment (of distance, change rate, etc.)
False assumption (about other vehicle, trafficway)
Excessive speed or acceleration
Following too closely
Failure to yield right of way
Sign, Signal disobeyed
Improper or inadequate turn
Improper or inadequate overtaking
Wrong way into oncoming traffic
Inadequate signal, horn, or lights
Improper avoidance maneuver (e.g., locked brakes)
Overcompensation
Other driver decision, performance error: _____

Vehicle Factors

Vehicle factor, type unknown
Tires and wheels
Brake system
Steering system
Suspension system
Fuel system, power train and exhaust
Communications system (windows, lights, horn, signals)
Ergonomic and anthropomorphic factors (driver seating, suitability of controls)
Vehicle dimensions, body weight, doors, hitch or attachments
Other vehicle factor: _____ (includes occupant restraint system)

Environmental Factors (trafficway and ambience)

Trafficway factor, type unknown
Roadway geometrics (width, lanes, grade, curvature, crown, crossection, superelevation)
Roadway surface material/condition/covering/traction
Traffic flow
Intersection design
Median or roadside features
Signs, signals, markings
Visibility limitation (e.g., fog) or illumination problem)
Traffic spray
Wind
Other weather factor
Pedestrian or pedalcyclist error
Non-contact vehicle
Other ambience factor: _____

Country, Corporation, Division (abc)

1	USA
11	General Motors Corp.
111	Buick
112	Cadillac
113	Chevrolet
114	Oldsmobile
115	Pontiac
116	GMC Truck and Coach
117	GMC Electromotive
12	Ford Motor Co.
121	Ford
122	Lincoln-Mercury
13	Chrysler Corp.
131	Chrysler
132	Dodge
133	Imperial
134	Plymouth
135	DeSoto
14	American Motors Corp.
141	American Motors
15	Other USA Corporations
151	Checker
152	Kaiser-Jeep
153	International
154	Studebaker/Avanti
155	Harley-Davidson
156	General Vehicles Corp. (Bricklin)
16	USA Truck Corp.
160	USA Truck Corp. Unknown
161	Brockway
162	Diamond-Reo
163	FWD
164	Kenworth
165	Mack
166	Peterbilt
167	White (Autocar, Freight Liner)
168	Other USA Truck Corp.
170	Unknown/Other USA Manufacturer of Special Purpose Vehicle
171	Flexible
172	Fruehauf
191	Male Pedestrian/bicyclist
192	Female Ped./bicyclist
2	Canada
21	GM Canada*
213	Chevrolet*
214	Oldsmobile*
215	Pontiac*
22	Ford Canada*
222	Lincoln-Mercury
3	Australia
317	GM (Holden)*
4	England
419	GM Vauxhall*
42	Ford England*
434	Plymouth (Cricket)*
45	British Leyland
451	Austin
452	Austin Healy
453	MG
454	Morris
455	Jaguar
456	Triumph
46	Rootes
482	Lotus Elan
484	Rolls Royce
488	Rover
5	France
531	Chrysler (Simca)*
551	Citroen
561	Renault
571	Peugeot
6	Germany
618	GM (Opel)*
622	Ford (Capri)*
651	Mercedes Benz
661	Volkswagen
662	Porsche
671	BMW
681	Audi
7	Italy
722	Ford of Italy*
751	Alfa-Romeo
761	Fiat
771	Ferrari
8	Japan
818	Chevrolet-Isuzu (LUV Pickup)*
832	Dodge-Mitsubishi (Colt)*
851	Toyo (Mazda)
861	Nissan (Datsun)
871	Toyota
881	Honda
882	Fuji Heavy Ind. (Subaru)
883	Suzuki
884	Kawasaki
885	Yamaha
9	Other Foreign
951	Saab (Sweden)
952	Volvo (Sweden)
000	Unknown, Missing data

*Corporation codes 1-4 are always the same from country to country, e.g., 12 = USA/Ford and 42 = England/Ford. Codes 5-9 have different definitions in each country.

MODEL TYPE (de)

Passenger Cars

01 Intermediate (GM A Body)
02 Standard/Full Size (B Body)
03 Luxury (C Body) or Limousine (D Body)
04 Mini Specialty (Mustang II)
05 Personal Luxury (E Body)
06 Specialty/Pony (F Body)
07 Specialty Intermediate (A SP Body)
08 Compact (X Body & Y Body)
09 Sub-compact/Mini-Imported (VW)
10 Super Sport (Corvette)
17 Pickup-Car (Ranchero)
18 Sub-compact/Mini-USA (H Body)
19 Foreign Sports Car (MG)
20 Unknown Automobile Body

Size	Standard	Specialty	Sports
Mini	09,18	04	19
Compact	08	06	10
Intermediate	01,17	07	--
Standard	02	05	--
Luxury/Limo	03	--	--

Multipurpose Passenger Vehicle

14 Utility (jeep, Bronco)
15 Carryall/Panel Truck
16 Pickup Truck w/Canopy/Shell Cover
17 Pickup-Car (Ranchero)
21 Motor Home
22 Pickup Truck w/Slide-in Camper
23 Pickup-Car w/Slide-in Camper
31 Chassis-Mounted Camper

Trucks

11 Small Van (Econoline)
12 Pickup
13 Unknown light truck (<1-1/2 Ton)
15 Carryall/Panel Truck
16 Pickup Truck w/Canopy/Shell Cover
22 Pickup Truck w/Slide-in Camper
30 Unknown Truck Type
31 Chassis-Mounted Camper
33 Delivery Van (Walk-in)
34 Straight Truck
35 Truck-Tractor
36 Chassis-Cab
37 Unknown Heavy Truck (>1-1/2 Ton)
38 Tractor + Semi-Trailer (Semi)
39 Truck (or Semi) + Full Trailer(s)

Buses

40 Unknown Bus Type
41 School Bus
42 Inter City (between)
43 Intra City (within)
44 Streetcar (on tracks)

Motorcycles

50 Unknown Motorcycle Type
51 1-75cc
52 76-125cc
53 126-250cc
54 251-500cc
55 501-750cc
56 751+cc
57 3-wheels (or w/Sidecar)

Special Purpose Vehicles

60 Unknown/Other Special
61 Snowmobile
62 ATV, All Terrain Vehicle
63 Amphibious Vehicle
64 Farm Vehicles
65 Construction Vehicles
66 Trailer-Private (camper)
67 Trailer-Commercial (cargo)
68 Train (cars)
69 Locomotive, Switcher

Miscellaneous Model Types

70 Pedestrian
71 Bicyclist, Other Pedalcycle
72 Pedestrian Conveyance (e.g., Person riding animal or in cart)

98 Other Model Type
00 Unknown Model Type

APPENDIX H

JOB DESCRIPTIONS FOR EMPLOYEES OF THE NASS

A tabulation of actual personnel requirements for each unit (PSU, CONTROL CTR, MAJOR CENTER, MANAGEMENT CENTER) is given in the Cost Section where individual system position needs are listed. A more specific description of job requirements, duties, and desirable backgrounds for these personnel is given here:

Primary Sampling Unit

Team Chief - Requires an individual with the necessary maturity and ability to work well with governmental and public service organizations so as to effectively establish sources, and a routine, for continuous data collection. In addition, this individual must be capable of effecting changes, or alterations, to arrangements for accident data when the need, as in a special QRS study, arises. It is preferred that this individual have some experience in the field of highway safety, preferably with a technical background in engineering principles, psychology, and/or transportation. A moderate amount of administrative experience is also required, particularly in automomous operation of small organizations. This should include experience in personnel administration, fiscal responsibilities and coordination of larger organization activities. Educational requirements are a college degree, preferably in a technical or administrative field, or its equivalent. A demonstrated ability in written or oral communications is also necessary. Salary: $17,000 per annum.

Field Investigator - Requires an individual with a technical background, preferably in the automotive field, social sciences and/or medical care fields. This person must work efficiently with a minimum of supervision and be able to work in the field with diverse (police, tow yard operators, local government employees) types of individuals. The ability to work alone, and be well motivated is most essential. The person must be capable of accepting the responsibility of satisfying dail data collection requirements and be sufficiently resourceful so as to achieve near perfect completeness and accuracy in such data. An ability in written and oral communications is required, and the ability to master the automatic entry of data collected into the NASS data handling system through use of electronic terminal entry apparatus (teletypewriter, electronic console, etc.). Educational requirements are a high school education and two or more years of Junior College is preferable. Salary: $12,000 per annum.

Secretary/Interviewer - This individual must be capable of basic secretarial skills, such as typing, filing, and organization (and maintenance) of field office activities in support of up to five field investigators and a Team Chief. This also requires the maturity and experience of communicating well with strangers as well as conducting telephone and in-person interviews of people involved in accidents so as to obtain basic human factors information needed in support of field accident investigations. Requires working with a minimum of supervision and must be well motivated. Educational requirements are a high school degree, training in secretarial skills and preferably some experience in communication with the public. Salary: $9,000 per annum.

Zone Center/MDAI Team

Zone Center Manager - Requires an individual with a background in the field of automotive safety, and must come from a professional discipline such as engineering, social sciences, medicine with an accomplished and recognized ability in his or her field. This individual must work well with governmental and public service type organizations and be an integral part of part of the recognized highway safety expertise in his (or her) locality. Requires the ability of effecting working arrangement for the collection of accident data within the locality of the zone center as well as the area selected of the establishment and operation of PSUs. Also must be capable of effecting changes or alteration to arrangement of accident data when the need arises, both with the Zone Center locality as well as in remote PSU localities. A demonstrated ability in Administration is needed, particularly in the operation of a moderate to large size research oriented type organizations. This should include experience in personnel administration, fiscal responsibilities and coordination of large organization activities. Educational requirements are a college degree, preferably at the Masters level or greater, in this person's professional discipline. Salary: $25,000 per annum.

Assistant Zone Center Manager - Duties require the ability to direct Zone Center operations in the absence of the Zone Center Manager, or as a long term replacement for the Zone Center Manager when the occasion requires. Requires a background in the field of automotive safety, and should also come from a professional discipline such as engineering, the social sciences or medicine with a recognized ability in his or her field.

This individual must work well with governmental and public service type organizations and be familiar and knowledgeable with the recognized authorities in the field of highway safety in his (or her) locality. Requires the ability of maintaining working arrangements of the collection of accident data within the locality of the zone center as well as PSU areas. An ability in administration is required, including personnel administration and the coordination and meeting of fiscal requirements. Educational requirements are a college degree in this person's professional discipline. Salary: $16,000 per annum.

Human Factor Specialist - Requires an individual whose background is as a working psychologist and/or human factors engineer with an interest in highway safety. This person must be capable of determining the various human factors considerations in accidents and demonstrate and ability of organizing such considerations in written and summary form. The individual must be able to work well with a minimum of supervision and organize his (or her) activities in conformance to self imposed time schedules. A basic knowledge and familiarity with anatomy and medical injuries is essential to the work, although this training might be accomplished after hiring. Educational requirements are a college degree in his or her field. Salary: $12,000 per annum.

Vehicle Factor Specialist - This individual must have a background and working experience in the field of automotive engineering, with an interest in vehicle safety. This person must be capable of identifying the various vehicle factors causing or contributing to

accidents and demonstrate the ability of organizing such investigative findings in written and summary form. The person must be able to work well with a minimum of supervision and organize his or her activities in conformance with time schedules compatible with other MDAI team members. A knowledge of emergency medical practices and anatomy is desirable. Education preferred is a college degree in the physical sciences. Salary: $12,000 per annum.

Environmental Factors Specialist - Requires a background in highway engineering, traffic engineering and/or civil engineering with an interest in automotive safety. This person must be capable of establishing and relating the various environmental factors (highway design, traffic features, etc.) as they relate to vehicle crashes. Must be able to work efficiently with a minimum of supervision and meet schedule demands of environmental evaluations of accidents in conformance with other MDAI team personnel. A knowledge of vehicle mechanics and/or psychology is desirable. Education is a college degree in the field of civil engineering or traffic engineering. Salary: $12,000.

Consultants - These individuals must be able to serve in consultative capacities to the MDAI team as the need based on various causative factors in accidents dictates. They must be recognized and accomplished in their fields and be assessible when the need for their professional expertise is indicated:

Medical Doctor/Pathologist
Lawyer
Toxicologist
Metallurgist

Data Center

Data Center Manager - Requires an individual with experience in managing large scale data system operations, trained in such a professional discipline as mathematics, statistics, computer sciences and be familiar and experienced with current computer program packages and programming. Must be recognized as accomplished in his or her field and have administrative abilities. This person must coordinate Data Center activities with NHTSA and remote Zone Centers including PSUs. A demonstrated ability in directing large research type programs is preferable. This should include experience in personnel administration, fiscal matters and the coordination and direction of large organization activities. Educational requirements are an advanced degrees in mathematics, statistics, and/or computer sciences. Salary: $30,000 per annum.

Senior Analyst - Requires a professional background and experience in data analysis, particularly variable and diverse data as obtainable in the highway safety research community. This individual must be capable of undertaking complete data analysis projects with minimal supervision. Must be familiar and knowledgeable with current computer program packages and should have a basic computer programming capability. Educational requirements are a degree, preferably an advanced degree, in biostatistics, or applied statistics with training in computer sciences. Salary: $24,000 per annum.

Programmer/Analyst - Requires a professional background and experience in programming of large scale

computers. Also needed is a working knowledge and experience with current accepted computer programming packages and programming techniques. Must be capable of undertaking complete programming efforts relating to highway safety data. Education requirements are a college degree in a technically related field or in computer sciences. Salary: $16,000 per annum.

Operator/Junior Operator - Requires a working knowledge and experience in operating large scale computer systems. Familiarity with current accepted computer programming packages and programming techniques is desirable. Must be capable of self motivation and able to undertake data operation tasks relating to large scale computers with only moderate supervision. Educational requirements are a college degree, its equivalent, or two years of junior college with training in computer operation.

Operator Clerk - Must be capable of operating large scale computer systems with supervision. A familiarity with current accepted computer programming packages and programming techniques is helpful. Requires the collating, organizing, and filing of computer materials as they relate to highway safety data. Educational requirements are a minimum of two years junior college with training in computer operation or its equivalent in experience.

Secretary - Requires an individual experienced and proficient in secretary skills, such as typing, filing, and maintaining office materials and technical publications. Its preferable that this person be familiar with automatic data handling systems. Salary: $9,000 per annum.

General Control Center

The general nature of positions in the General Control Center are discussed here. The skills of a variety of senior safety and management specialists can be utilized. Clearly, NASS staffing within NHTSA will be the outcome of the development of the overall NASS and its gradual implementation nationally. It should be helpful to list what positions might be required within NHTSA for the General Control Center as well as general areas of responsibilities for those positions.

Program Director - The NHTSA NASS program director with responsibilities including the pilot testing of NASS, its evolutionary implementation, establishing fiscal needs of NASS in terms of its programmed and planned implementation and the direction of all NASS activities.

Senior Analyst - That NASS individual primarily responsible for analysis activities within the system and for the routine, as well as special, generation of accident statistics and trend data.

Quality Control Analyst - Primarily responsible for the quality and consistency in NASS accident data, in the field operations, and in the findings, inferences and statistical documents generated from NASS data.

Training Specialist/MDAI Manager - The director of NASS MDAI activities responsible for the training of all NASS field personnel. This will include periodic updating of investigator personnel in

techniques, or refresher learning programs to insure adequately trained NASS field personnel.

Vehicle, Human, Environmental Specialists - As the titles imply, these would be those NHTSA senior specialists in the fields of vehicle, human, and environmental factors which act as centers of consultation, problem solving, arbitrators of field problems or questions relating to their field of expertise, from field data collection activities.

Quick Reaction System Manager - A manager of the QRS and its associated activities within NASS. These would include the planning, execution, analysis of QRS data and the generation of reports and documents based on conducting QRS studies.