ANALYSIS OF FATALITY DATA BY STATE

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16. Abstract

Previous work at HSRI had resulted in a computer file of demographic variables associated with highway fatality information by state. This report describes the augmentation of that data base by several new and transformed variables, and discusses the results of analyses done using regression models to attempt to explain the variation among state fatality rates.

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ANALYSIS OF FATALITY DATA BY STATE

INTRODUCTION

A previous task under this NHTSA contract has resulted in a file of demographic variables associated with highway fatality information for each of the 50 states and the District of Columbia.

Data entered in the file covered broadly the areas of population characteristics (number of accidents, licensed drivers, etc.), geographic characteristics (area, region of the country), roadway characteristics (e.g., the number of miles of unpaved highway), climatological information, and fatal accident counts for the years 1972-1974.

The present study was undertaken to develop analytical techniques for relating the accident data to the demographic information...that is, to try to account for the variation in fatality rate among the states by the demographic, climatological, population, etc. variables. A secondary purpose of this study was to determine the adequacy of the present data file to conduct such an analysis, and to add to the data base other appropriate information.

This study has led to the development of regression models explaining the sources of variation among state fatality rates, and the characteristics of states with changes in fatality rates during and after the peak of the energy crisis in the United States. These models will be presented in Sections 2 and 3 of this report. In order to perform these analyses, the original data file was modified in two ways--a set of transformed variables was constructed to provide, for example, the fatality rate (fatalities per unit population) rather than the simple fatality counts of the original file. Secondly, new data have been added associated with the highway safety related activities within the states. In addition, the 1975 fatalities have been added--based on the preliminary data supplied by NHTSA. Those new data elements considered to be of general utility have been added to the original file (which may be accessed by other users as HSRI:STATEFILE); an up-to-date codebook is appended to this report.

ANALYSIS--PART I

The specific question addressed in this analysis is to determine the differences between those states which improved in their fatality rates (i.e., had fewer fatalities) in 1974 as compared with 1973, and then returned toward their 1973 levels in 1975.

Table 1 presents the fatality count data for the three years, the differences in counts for the three comparisons (i.e., 1973 minus 1974, 1974 minus 1975, and 1973 minus 1975), and the rate differences (fatalities per unit population) for the same three comparisons.

The fatality rate of the nation improved both in 1974 (vs. 1973), and in 1975 (vs. 1974). The mean fatality rate change from 1973 to 1974 was .044 fatalities per 1000 population. The mean fatality rate change from 1974 to 1975 was .0162 fatalities per 1000 population. In order to make a comparison among the states we have normalized the data by subtracting the mean and forming four groups of states. These are (1) states which had a fatality reduction higher than average in 1974, and had another higher than average reduction in 1975--defined herein as BETTER-BETTER; (2) those states which had a higher than average reduction in 1975--defined herein as BETTER-WORSE; (3) those states which had a lower than average reduction in 1974 and a better than average reduction in 1975--defined herein as WORSE-BETTER; and (4) those states which had a lower than average reduction in both 1974 and 1975--defined herein as WORSE-WORSE. In fact there are states in the "worse-worse" category which actually improved in both comparisons (see Oklahoma, for example). But even with a reduction in fatality rate, Oklahoma improved less than the mean amount in both transitions.

Table 1

	1973 Fatalities	1974 Fatalities	1975 Fatalities	1973 minus 1974 (A minus B)	1974 minus 1975 (B minus C)	1973 minus 1975 (A minus C)	Fatality rate difference 73-74 D ÷ Population	Fatality rate difference 74-75 E ÷ Population	Fatality rate difference 73-75 F ÷ Population
ALABAMA	1238.	975.	911.	263.	64.	327.	.0743	.0181	.0924
ALASKA	75.	85.	112.	-10.	-27.	-37.	-.0303	-.0818	-.1121
ARIZONA	949.	724.	599.	225.	125.	350.	.1093	.0607	.1701
ARKANSAS	665.	527.	543.	138.	-16.	122.	.0677	-.0079	.0599
CALIF.	4888.	3983.	4162.	905.	-179.	726.	.0439	-.0087	.0352
COLORADO	674.	619.	580.	55.	39.	94.	.0226	.0160	.0386
CONN.	511.	397.	392.	114.	5.	119.	.0371	.0016	.0387
DELEWARE	125.	114.	132.	11.	-18.	-7.	.0191	-.0313	-.0122
D. OF C.	76.	78.	74.	-2.	4.	2.	-.0027	.0054	.0027
FLORIDA	2656.	2264.	2012.	392.	252.	644.	.0511	.0328	.0839
GEORGIA	1880.	1540.	1492.	340.	48.	388.	.0710	.0100	.0811
HAWAII	138.	128.	139.	10.	-11.	-1.	.0120	-.0132	-.0012
IDAHO	348.	326.	286.	22.	40.	62.	.0286	.0519	.0805
ILLINOIS	2352.	2044.	2060.	348.	-56.	292.	.0310	-.0050	.0260
INDIANA	1542.	1164.	1068.	378.	96.	474.	.0711	.0181	.0892
IOWA	812.	682.	643.	130.	39.	169.	.0448	.0134	.0582
KANSAS	625.	526.	521.	99.	5.	104.	.0434	.0022	.0456
KENTUCKY	1118.	795.	862.	323.	-67.	256.	.0966	-.0200	.0766
LA.	1143.	821.	967.	322.	-146.	176.	.0855	-.0388	.0468
MAINE	247.	216.	215.	31.	1.	32.	.0302	.0010	.0311
MARYLAND	819.	732.	697.	87.	35.	122.	.0214	.0086	.0300
MASS.	1017.	957.	892.	60.	65.	125.	.0103	.0112	.0215
MICHIGAN	2202.	1875.	1837.	327.	38.	365.	.0362	.0042	.0404
MINN.	1025.	843.	753.	182.	90.	272.	.0467	.0231	.0698
MISS.	893.	643.	590.	250.	53.	303.	.1096	.0232	.1328
MISSOURI	1428.	991.	1015.	437.	-24.	413.	.0919	-.0050	.0868
MONTANA	322.	302.	302.	20.	0.	20.	.0277	0.	.0277
NEBRASKA	433.	387.	382.	46.	5.	51.	.0298	.0032	.0331
NEVADA	265.	220.	212.	45.	8.	53.	.0821	.0146	.0967
NEW HAMP	147.	167.	162.	-20.	5.	-15.	-.0253	.0063	-.0190
NEW JER.	1358.	1115.	1026.	243.	89.	332.	.0330	.0121	.0451
NEW MEX.	640.	549.	558.	91.	-9.	82.	.0823	-.0081	.0741
NEW YORK	3025.	2610.	2768.	415.	-158.	257.	.0227	-.0087	.0141
N CAROL.	1885.	1580.	1549.	305.	31.	336.	.0578	.0059	.0637
N DAKOTA	208.	162.	167.	46.	-5.	41.	.0719	-.0078	.0641
OHIO	2355.	1887.	1948.	468.	-61.	407.	.0436	-.0057	.0379
OKLAHOMA	796.	752.	753.	44.	-1.	43.	.0167	-.0004	.0163
OREGON	642.	669.	570.	-27.	99.	72.	-.0121	.0445	.0324
PENNA.	2442.	2155.	2172.	287.	-17.	270.	.0241	-.0014	.0227
RHODE IS	131.	99.	107.	32.	-8.	24.	.0329	-.0082	.0247
S CAROL.	964.	873.	816.	91.	57.	148.	.0334	.0209	.0543
S DAKOTA	285.	226.	185.	59.	41.	100.	.0861	.0599	.1460
TENN.	1438.	1258.	1051.	180.	207.	387.	.0436	.0502	.0938
TEXAS	3668.	2969.	3490.	699.	-521.	178.	.0593	-.0442	.0151
UTAH	361.	235.	289.	126.	-54.	72.	.1089	-.0467	.0622
VERMONT	154.	128.	142.	26.	-14.	12.	.0560	-.0302	.0259
VIRGINIA	1212.	1051.	1086.	161.	-35.	126.	.0335	-.0073	.0262
WASH.	772.	759.	765.	13.	-6.	7.	.0038	-.0017	.0020
W. VA.	476.	446.	468.	30.	-22.	8.	.0167	-.0123	.0045
WIS.	1148.	908.	936.	240.	-28.	212.	.0525	-.0061	.0464
WYOMING	188.	195.	216.	-7.	-21.	-28.	-.0198	-.0595	-.0793

We proceed to answer the question: What is different about these four groups of states? As a first step we have run a number of one-way analysis of variance studies using the four categories as the control variable and a number of the recorded variables in the file as dependent variables. These are summarized in Table 2, which presents the mean value of each dependent variable for each level of the control variable. The last row of each column is the significance level of the f-ratio test indicating whether there is a statistically significant difference in the observed means. Only two of these variables show significance at better than the 10 percent level--the percent of rural roads, and the NHTSA report card score.

Table 3 presents a listing of the states in the order used for the analysis--better-better, better-worse, etc.---, and one can see by inspection that the New England states tend to be in the "worse-worse" group, the northwestern states in the "worse-better" group, etc. In order to see the geographical distribution better, a choropleth map was prepared using the SYMAP programs, plotted as Figure 1, and the four types of states are shaded differently as shown on the legend. Notice that the "worse-worse" group predominates along the northeastern seaboard and in California, with only two representatives in the mid-section of the country (Oklahoma and Indiana). The number two group (those which get better in 1974 and then worse in 1975) are almost entirely in the southern part of the country--this associates with the temperature and the number of freezing days noted on Table 2. The number three group is predominately in the great northwest, with Michigan, Ohio, South Carolina, and Maine adding in. The final group--those which were better than average in both transitions--is somewhat scattered around the country with a predominant band through the midwest.

Table 2
Analysis of Variance for Improvement Categories for Selected Variables

	Population	% Young Drivers	% Rural Roads	Report Card Score	Number of Freezing Days	Number of Rainy Days	Average Temperature	Land Area (1000's of Sq.Mi.)	Driver Education Score	EMS Score	Conformance with Uniform Vehicle Code
Better-Better	3490	13.9	83.9	1024	93.2	36.9	57.7°	65.5	80.4	40.4	48.6
Worse-Better	3383	13.7	65.2	1233	117.0	34.8	52.3°	40.5	88.4	44.6	47.6
Better-Worse	5413	14.3	85.8	1115	99.9	30.9	54.7°	83.3	86.2	49.2	47.3
Worse-Worse	4205	13.9	79.5	1150	112.6	34.6	52.3°	85.6	83.7	51.1	55.1
F ratio Significance	.66	.40	.07	.01	.64	.76	.30	.54	.62	.77	.55

SYMAP
TIME = 0.0
FOUR GROUPS OF STATES

FATALITY RATE CHANGE

1973-1974-1975

DATA VALUE EXTREMES ARE 1.00 4.00
ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
('MAXIMUM' INCLUDED IN HIGHEST LEVEL ONLY)

MINIMUM	1.00	1.75	2.50	3.25
MAXIMUM	1.75	2.50	3.25	4.00

PERCENTAGE OF TOTAL ABSOLUTE VALUE RANGE APPLYING TO EACH LEVEL
25.00 25.00 25.00 25.00
FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

	BETTER BETTER	WORSE BETTER	BETTER WORSE	WORSE WORSE
LEVEL	1	2	3	4
	---------	!!!!!!!!!	XXXXXXXX	●●●●●●●●

Figure 1
Geographic Distribution of Four Categories of Improvement in Fatal Accident Rate

Table 3
Listing of States by Improvement Categories

BETTER BETTER	WORSE BETTER	BETTER WORSE	WORSE WORSE
Alabama	Colorado	Arkansas	Alaska
Arizona	Connecticut	California	Delaware
Florida	D. of C.	Kentucky	Hawaii
Georgia	Idaho	Louisiana	Illinois
Indiana	Maryland	Missouri	Maine
Iowa	Massachusetts	New Mexico	Montana
Kansas	Michigan	North Dakota	New York
Minnesota	Nebraska	Ohio	Oklahoma
Mississippi	New Hampshire	Texas	Pennsylvania
Nevada	New Jersey	Utah	Rhode Island
N. Carolina	Oregon	Vermont	Virginia
S. Dakota	S. Carolina	Wisconsin	Washington
Tennessee			W. Virginia
			Wyoming

DEVIATIONS FROM THE MEAN REDUCTION

We might expect, in addition to the reduction in the mean fatality rate, that there would be some random unexplained variation among the states. Further, it seems likely that the extremes in the variation (both positive and negative) would be associated with the states with the smallest populations and therefore the smallest number of accidents. If we had a large enough time history of fatality rates by state (say 20 years) we could estimate the random component of the variation in fatality rate. Then we would be in a better position to judge whether the individual states exhibited variation greater than might be expected. Since that history is not presently recorded in this file, we will look at the variation which we do observe as a function of some size parameters. A discussion of the technique follows.

The change in fatality rate from 1973 to 1974, 1974 to 1975, and 1973 to 1975 is computed by dividing the difference in fatality count (over the time period) divided by the 1973 population for each state. The mean reduction for 1973-74 is .044003 fatalities per 1000 population; for 1974-75 the corresponding value is .016200, and for 1973-75, .060203. Note that the last is the sum of the first two, and that the fatality rate decreased in all three comparisons. The distribution of these rate changes by state was normalized by subtracting the mean from each value. Since our interest is in deviation from the mean, this was subsequently transformed into a one-sided distribution by taking the absolute value. Table 4 shows the values of this variable (i.e., the absolute value of the deviation from the mean of the fatality rate) for each comparison.

Figure 2A through 2D displays this absolute value of the deviation from the mean against state population and population density. The general characteristic of all of these plots is that the lower populations and densities may assume a value in the entire range of fatality rate changes, but that the higher population and density states are restricted to the smaller end of the fatality rate change. In effect the plot is bounded on the right by an exponential curve, and then points are distributed more or less randomly to the left of that. It is only the small states (i.e., low population or low density) that exhibit large variations either positive or negative, in their year to year fatality rates.

There is an exception of this simple rule in the present data which is most obvious in Figure 2D. Texas has a large population (about 12 million) and has a large deviation from the mean where a small one would be expected. The 74-75 change can be explained in part by the large reduction Texas experienced in 1973-74, so that the change in the 74-75 period can be viewed as a regression to the mean. In any case, Texas had a large swing in both comparisons, and we might well ask what is different about Texas--whether this is just an extreme value of a random variation or there is something fundamentally different about traffic accidents in Texas is not clear. We note that the effect is not as marked on the density plots.

Table 4

Normalized Fatality Rate Changes

State	Normalized Value 1973-74	Normalized Value 1974-75	Absolute Normalized Value 1973-74	Absolute Normalized Value 1974-75
ALABAMA	.031497	.016478	.031497	.016478
ALASKA	-.073121	-.083424	.073121	.083424
ARIZONA	.066511	.059133	.066511	.059133
ARKANSAS	.024929	-.009461	.024929	.009461
CALIF.	.001112	-.010295	.001112	.010295
COLORADO	-.020249	.014397	.020249	.014397
CONN.	-.005757	.000019	.005757	.000019
DELEWARE	-.023721	-.032856	.023721	.032856
D. OF C.	-.045499	.003756	.045499	.003756
FLORIDA	.008237	.031215	.008237	.031215
GEORGIA	.028223	.008423	.028223	.008423
HAWAII	-.030799	-.014827	.030799	.014827
IDAHO	-.014247	.050342	.014247	.050342
ILLINOIS	-.011846	-.006590	.011846	.006590
INDIANA	.028288	.016453	.028288	.016453
IOWA	.001948	.011824	.001948	.011824
KANSAS	.000622	.000588	.000622	.020588
KENTUCKY	.053831	-.021654	.053831	.021654
LA.	.042729	-.040395	.042729	.040395
MAINE	-.012662	-.000633	.012662	.000633
MARYLAND	-.021442	.006994	.021442	.006994
MASS.	-.032505	.009566	.032505	.009566
MICHIGAN	-.006661	.002596	.006661	.002596
MINN.	.003885	.021489	.003885	.021489
MISS.	.066783	.021629	.066783	.021629
MISSOURI	.049047	-.006651	.049047	.006651
MONTANA	-.015079	-.001606	.015079	.001606
NEBRASKA	-.012987	.001637	.012987	.001637
NEVADA	.039299	.012993	.039299	.012993
NEW HAMP	-.068102	.004715	.068102	.004715
NEW JER.	-.009806	.010485	.009806	.010485
NEW MEX.	.039460	-.009743	.039460	.009743
NEW YORK	-.020097	-.010256	.020097	.010256
N CAROL.	.015024	.004273	.015024	.004273
N DAKOTA	.029057	-.009418	.029057	.009418
OHIO	.000794	-.007290	.000794	.007290
OKLAHOMA	-.026107	-.001986	.026107	.001986
OREGON	-.054953	.042888	.054953	.042888
PENNA.	-.018704	-.003034	.018704	.003034
RHODE IS	-.009930	-.009828	.009930	.009828
S CAROL.	-.009436	.019304	.009436	.019304
S DAKOTA	.043313	.058248	.043313	.058248
TENN.	.000808	.048564	.000808	.048564
TEXAS	.016449	-.045781	.016449	.045781
UTAH	.066084	-.048278	.066084	.048278
VERMONT	.013216	-.031778	.013216	.031778
VIRGINIA	-.009353	-.008881	.009353	.008881
WASH.	-.039027	-.003356	.039027	.003356
W. VA.	-.026096	-.013869	.026096	.013869
WIS.	.009710	-.007734	.009710	.007734
WYOMING	-.062648	-.061096	.062648	.061096

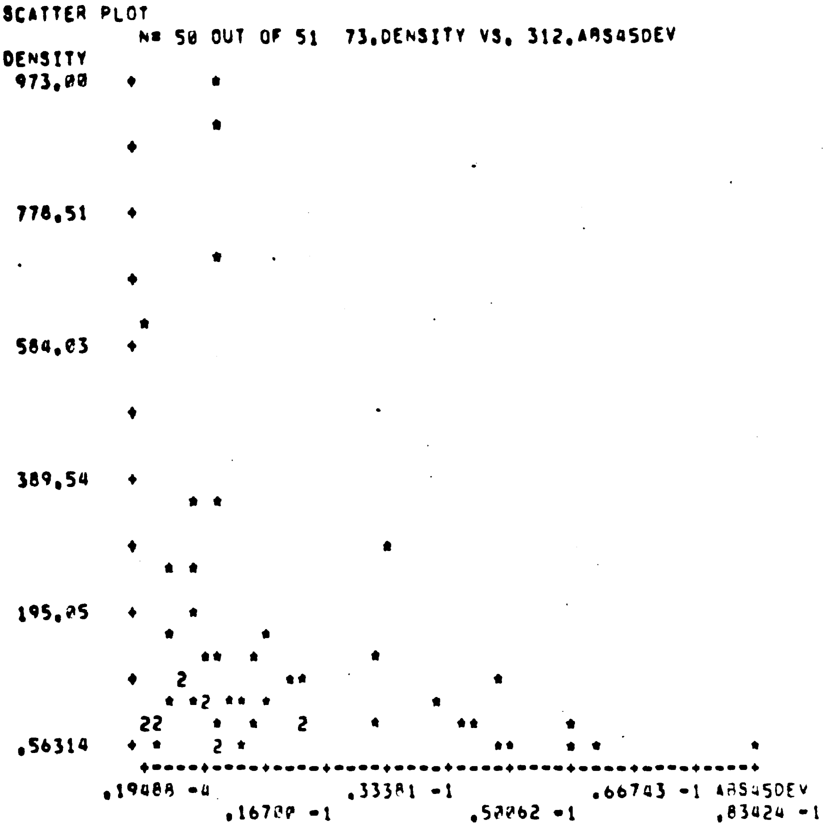


Figure 2A - 1973-1974 vs. Density

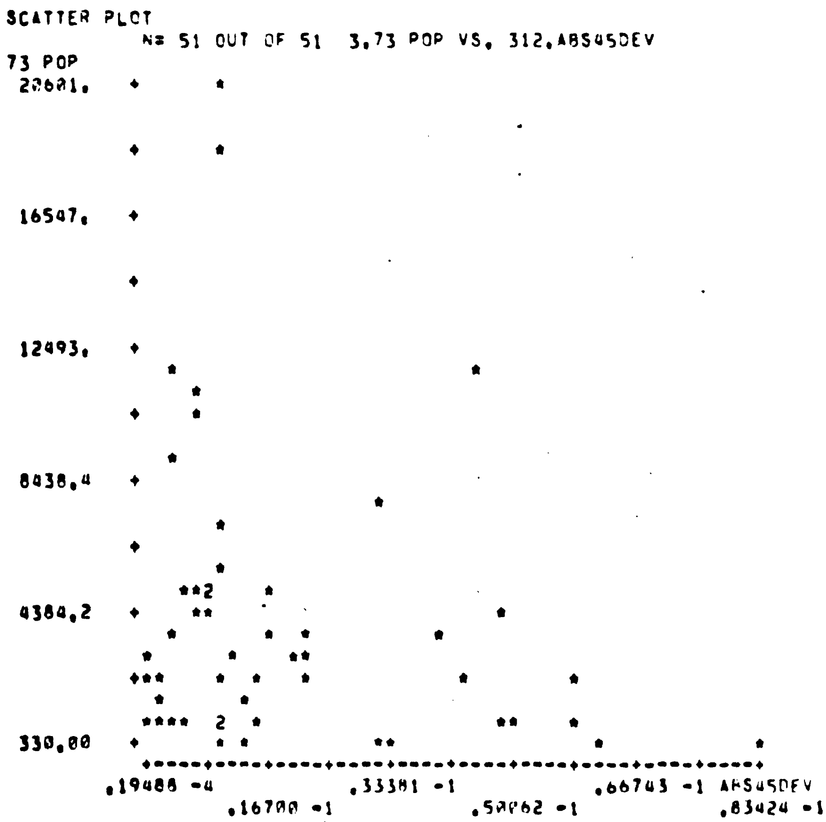


Figure 2B - 1973-74 vs. Population

Figure 2 - Absolute Value of the Deviation From the Mean Plotted Against State Population and Population Density

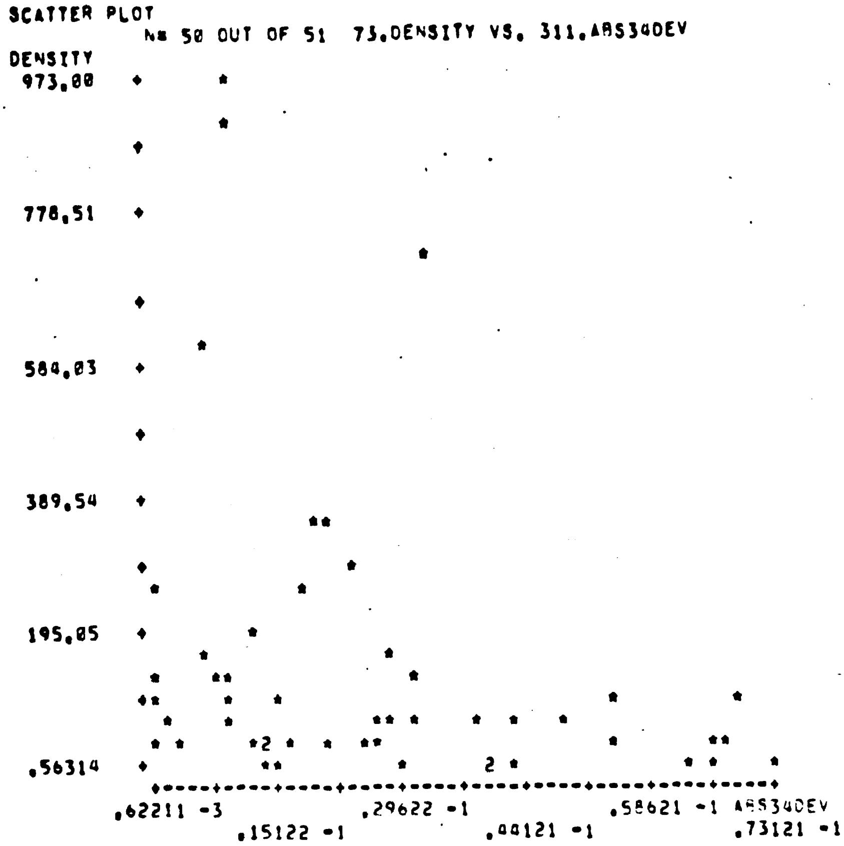


Figure 2C - 1974-1975 vs. Density

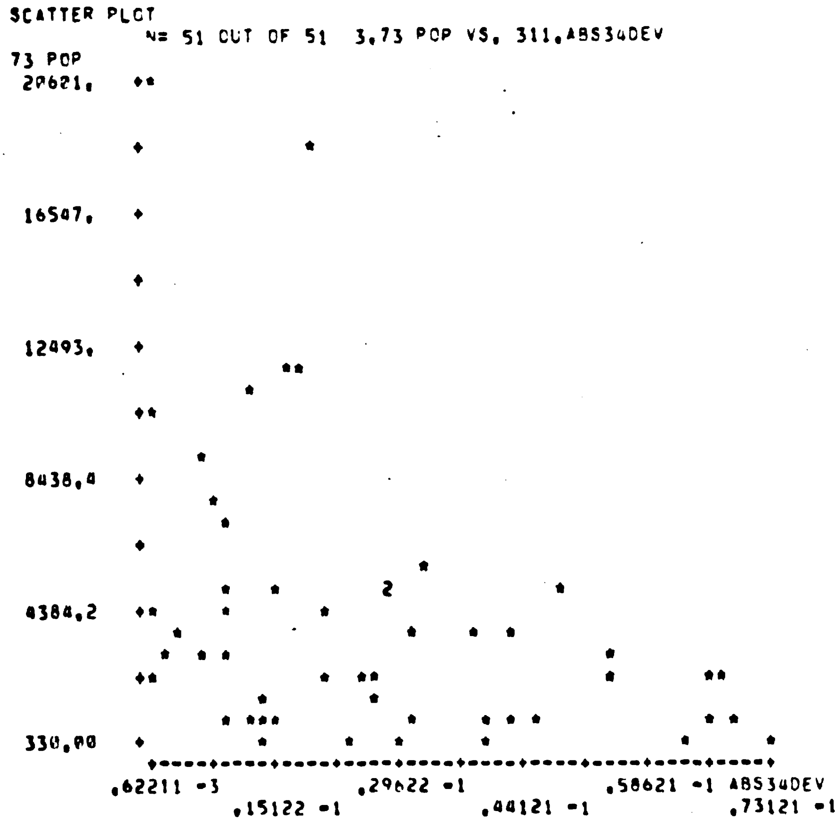


Figure 2D - 1974-1975 vs. Population

Figure 2 - Absolute Value of the Deviation From the Mean Plotted Against State Population and Population Density

ANALYSIS--PART II

In this section of the report we address the relationship between fatality rate in the various states and the demographic characteristics of the states--seeking a basic explanation of the total fatality rate rather than a change in that rate. As a first step we look at the correlation between fatality rate and a number of the variables recorded in the file.

Table 5 is the correlation matrix with three "dependent" variables as columns, and a number of the variables contained in the present digital file as rows. Column 1 is an average fatality rate for the years 1972 and 1973, arrived at by dividing the sum of fatalities for those two years by the sum of the population estimates for the same two years. Column 2 represents the number of fatalities per gallon of gas sole, and column 3 represents the number of fatalities per mile travelled. Variables 37, 73, 75, 76, 77, and 86 yield high enough correlation coefficients to make further analysis with them of interest.

Figure 3A is a scatter plot of fatality rate (ordinate) vs. population density (in people per x square mile, abcissa), and can be seen to be a non-linear relationship. A number of transformations of density were attempted, including polynomials of degree 2, 3, 4, etc., and also a logarithmic transformation. Both a second degree polynomial and a log transformation were about equally successful in relating density to fatality rate. The logarithmic relationship is shown in Figure 3B, and in further regressions in this paper we will use this transformation.

Table 6 presents a regression analysis of fatality rate (1972-1973) by log density, number of rainy days, percent of unsurfaced roads, percent of young drivers, and the NHTSA report card score. An r-squared value of .78292 indicates a relatively good model, but the percent young drivers and the report card scores are not very significant. Thus a simpler model is presented in Table 7 with only three factors--log density, number of rainy days, and the percent of unsurfaced roads. This yields an r-square of .76270.

Table 5
Correlation Coefficients

78. Fatalities/Population	1.0000		
80. Fatalities/Gallon	.8757	1.0000	
81. Fatalities/Mile	.8703	.9319	1.0000
2. 72 Population	-.3965	-.3047	-.2365
3. 73 Population	-.3931	-.3027	-.2348
4. 72 Fatals	-.2176	-.1533	-.0888
5. 73 Fatals	-.2109	-.1489	-.0816
20. 72 Reg Veh	-.3305	-.2810	-.2151
24. 73 Gal Gas	-.3108	-.2723	-.2017
34. Land Area	.4943	.3389	.4151
35. Average Temperature	.0929	.2072	.2344
36. Freezing Days	.0375	-.0961	-.1135
37. Rainy Days	-.3870	-.2641	-.2233
58. 73 Miles	-.3314	-.2917	-.2438
73. Density	-.6180	-.6062	-.5746
75. Rural Road Percent	.5978	.5697	.5384
76. Unsurrd Percent	.7598	.5869	.5766
77. Young Percent	.4677	.5212	.4625
86. Report Card	-.3042	-.3007	-.3916
87. Driver Education	.0247	.0362	-.0708
88. EMS	.0075	-.0508	-.0758
89. UVC Percent	.1383	.0922	.0580
	78. ALLFAT	80. % FAT GAL	81. FAT MILE

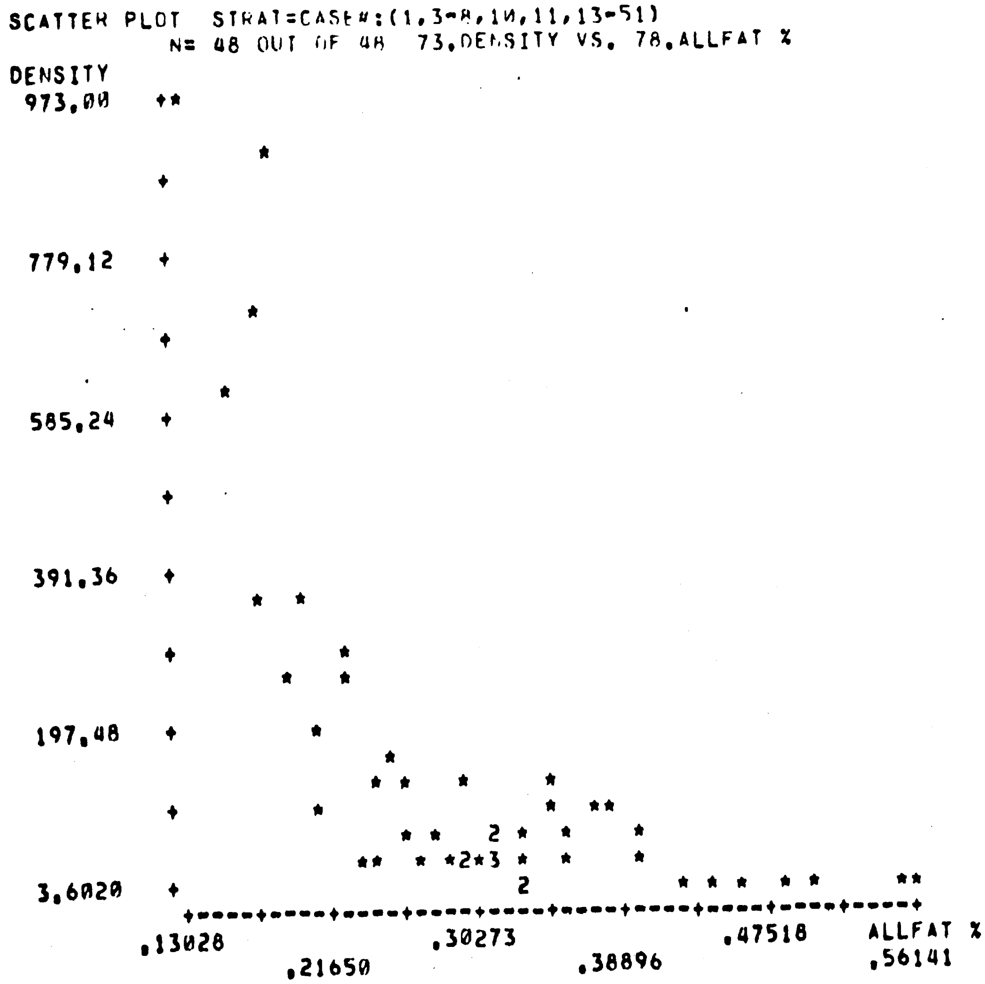


Figure 3A - Density and Fatality Rate

Figure 3 - Density and Log Density Plotted Against Fatalities per Population

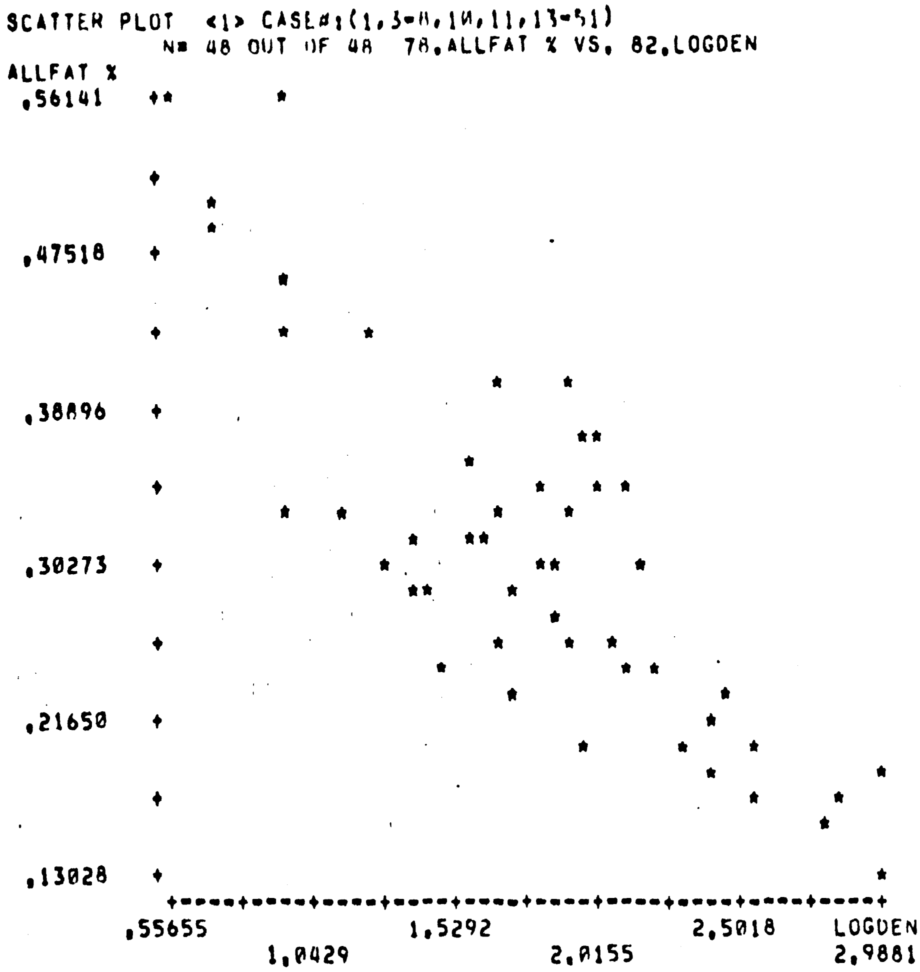


Figure 3B - Log Density vs. Fatality Rate

Figure 3 - Density and Log Density Plotted Against Fatalities per Population

Table 6
Five Factor Regression Model

Least Squares Regression (1) CASE#: (1,3-8,10-11,13-51)

Analysis of Variance of 78. ALLFAT % N = 48 out of 48

SOURCE	DF	SUM SQRS	MEAN SQR	F-STAT	SIGNIF
Regression	5	.37064	.74128 -1	30.295	.0000
Error	42	.10277	.24469 -2		
Total	47	.47341			

MULT R = .88483 R-SQR = .78292 SE = .49466 -1

VARIABLE	PARTIAL	COEFF	STD ERROR	T-STAT	SIGNIF
CONSTANT		.13991	.19814	.70614	.4840
82. LOGDEN	-.51758	-.89568 -1	.22848 -1	-3.9202	.0003
37. RAINDAYS	.37717	.22225 -3	.84208 -4	2.6393	.0116
76. UNSURRD%	.49447	.26088	.70762 -1	3.6867	.0006
77. YOUNG %	.24283	1.9728	1.1880	1.6607	.1042
86. RPT CARD	-.18518	-.64298 -4	.52650	1.2212	.2288

Table 7
Three Factor Regression Model

Least Squares Regression (1) CASE#: (1,3-8,10,11,13-51)

Analysis of Variance of 78. ALLFAT %   N = 48 out of 48

SOURCE	DF	SUM SQRS	MEAN SQR	F-STAT	SIGNIF
Regression	3	.36107	.12036	47.139	.0000
Error	44	.11234	.25532 -2		
Total	47	.47341			

MULT R = .87333   R-SQR = .76270   SE = .50529 -1

VARIABLE	PARTIAL	COEFF	STD ERROR	T-STAT	SIGNIF
CONSTANT		.37417	.54029 -1	6.9253	.0000
82. LOGDEN	-.64171	-.11216	.20209 -1	-5.5501	.0000
37. RAINDAYS	.43900	.25081 -3	.77387 -4	3.2410	.0023
76. UNSURRD%	.47335	.25478	.71477 -1	3.5645	.0009

We note that the last two tables have been prepared using data only from the 48 contiguous states. The District of Columbia is assigned a missing data category for density--a property of the file arrangement which tabulated state area in 1000's of square miles. Alaska and Hawaii also have been eliminated from this analysis. Hawaii would fit reasonably well, but Alaska does not. Both were discarded, however.

The equation resulting from the last table (Table 7) is as follows:

$$Y = .37417 - .11216(\log_{10} \text{density}) + .00025081 \text{ (No. of rainy days)} + .25478 \text{ (fraction of unsurfaced roads)}$$

One might expect a strong correlation between density and such factors as the fraction of unsurfaced roads. Indeed, this is true. The correlation coefficient for density and the fraction of unsurfaced roads is -.4744; for density and the fraction of rural roads, -.8892; for density and the fraction of young drivers, -.4428; and for density and the number of rainy days, +.3281. Thus the denser the population, the fewer unsurfaced roads, the fewer rural roads, the fewer young drivers, and the more rain. With such correlations, it is interesting to see how well log density alone regresses with fatality rate, and this is shown in Table 8 and Figure 3B. The regression equation (this time for inverse density, or square miles per person) is:

$$\text{Fatality Rate} = .55644 + .13781\ (\log_{10} \frac{1}{\text{density}})$$

and the r-square value is .67620

Table 8
One Factor Regression Model

Least Squares Regression (1) CASE#: (1,3-8,10,11,13-51)

Analysis of Variance of 78. ALLFAT % N = 48 out of 48

SOURCE	DF	SUM SQRS	MEAN SQR	F-STAT	SIGNIF
Regression	1	.32012	.32012	96.063	.0000
Error	46	.15329	.33324 -2		
Total	47	.47341			

MULT R = .82231 R-SQR = .67620 SE = .57727 -1

VARIABLE	PARTIAL	COEFF	STD ERROR	T-STAT	SIGNIF
CONSTANT		.55644	.26643 -1	20.885	.0000
82. LOGDEN	-.82231	-.13781	.14060 -1	-9.8012	.0000

DISCUSSION

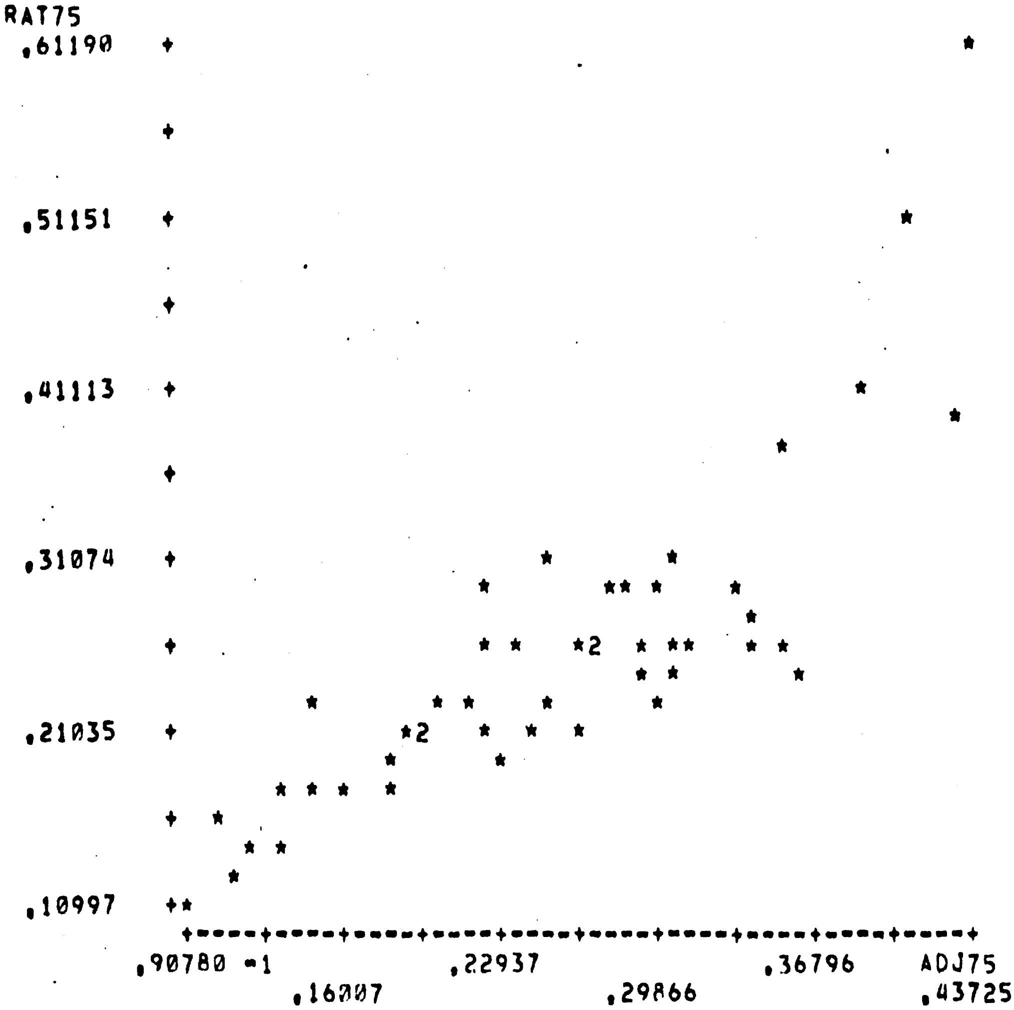
We may attempt to predict the fatality rate in a future year using equations of the type above. Fatalities for 1975 were estimated from this equation (using 1973 population rates however). There is an obvious bias, resulting from the fact that the 1975 mean rate for the nation was substantially below that of the 1972-73 period. We can remove the bias, with the knowledge of the actual 1975 data, and then calculate the expected distribution of fatalities by state in 1975. These are presented in Table 9 along with a column indicating the differences. Figure 4 displays the rates computed in the two ways against each other, and we note the correlation is .83.

Of course one should be interested in the application of those countermeasures, and in determining the effectiveness of those measures. But simple fatality rates are likely to be dominated by countermeasures which correlate strongly with density. For example, periodic motor vehicle inspection has been analyzed with respect to state fatality rates, with a number of authors showing that lower fatality rates obtain when inspection is present. Vehicle inspection quality has been divided into three categories--(1) those states which have never implemented a periodic motor vehicle inspection system, (2) those states which implemented such a system between 1966 and 1975, and (3) those states which implemented a periodic inspection system prior to 1966. While there are a number of things about these three sets of states which vary, one of the most important is population density--the "never" group having a mean population density of 120.87 persons per square mile, the "late" group (implemented between 1966 and 1975) having a population density of 57.917, and the "early" group having a mean population density of 225.84 persons per square mile. Other factors are shown in Table 10, and the variation in fatality rate can be noted by comparison with Table 9.

Table 9
Predicted 1975 Fatality Rate Compared to Adjusted Actual Rate

STATE	PREDICTED	ACTUAL
ALABAMA	.257417	.304929
ARIZONA	.291059	.334986
ARKANSAS	.266568	.311550
CALIF.	.202029	.192374
COLORADO	.237998	.290731
CONN.	.127438	.114615
DELEWARE	.229167	.143811
FLORIDA	.262047	.290460
GEORGIA	.311743	.304387
IDAHO	.371429	.353261
ILLINOIS	.183339	.159092
INDIANA	.200903	.183539
IOWA	.221419	.217284
KANSAS	.228609	.297694
KENTUCKY	.257929	.236724
LA.	.256908	.268565
MAINE	.209144	.265283
MARYLAND	.171253	.134115
MASS.	.153317	.104208
MICHIGAN	.203118	.187811
MINN.	.193226	.226022
MISS.	.258658	.261525
MISSOURI	.213370	.220051
MONTANA	.418863	.389934
NEBRASKA	.247730	.332631
NEVADA	.386861	.433300
NEW HAMP	.204804	.242386
NEW JER.	.139383	.116032
NEW MEX.	.504521	.406666
NEW YORK	.151547	.132448
N CAROL.	.293761	.221945
N DAKOTA	.260937	.340776
OHIO	.181530	.144844
OKLAHOMA	.285986	.282046
OREGON	.256180	.355750
PENNA.	.182490	.178155
RHODE IS	.109969	.090780
S CAROL.	.299340	.297662
S DAKOTA	.270073	.341771
TENN.	.254726	.220835
TEXAS	.295913	.274872
UTAH	.249784	.358714
VERMONT	.306034	.248157
VIRGINIA	.225733	.199944
WASH.	.223097	.248866
W. VA.	.260870	.274162
WIS.	.204859	.191881
WYOMING	.611898	.437250

SCATTER PLOT STRAT=CASE#:(1,3-8,10,11,13-51)
N= 48 OUT OF 48 321.RAT75 VS. 322.ADJ75



WRITE OBSERVATIONS STRAT=CASE#:(1,3-8,10,11,13-51)
VARIABLES BY CASE

COMMAND
?CORR STRATA=SAME VAR=321,322

CORRELATION COEFFICIENTS STRAT=CASE#: (1,3-8,10,11,13-51)

N = 48 DF = 46 R@.0500 = .2845 R@.0100 = .3683

CORRELATION BETWEEN 321.RAT75 AND 322.ADJ75 = .8285

Figure 4

Predicted Fatality Rate Plotted Against Actual Adjusted Fatality Rate

TABLE 10

SELECTED MEASURES ON STATES
DIVIDED INTO PMVI GROUPS

	State	Percent Conformity With UVC	DOT Report Card	Driver Education Score	EMS Score
	Alabama	36	739	44	50
	Alaska	61	759	43	15
	Arizona	60	1206	73	90
	California	42	1255	100	55
	Connecticut	32	1162	86	25
	District of Columbia	44	1288	90	45
	Illinois	59	1160	100	90
	Iowa	36	883	90	20
"Never" Group (20)	Kansas	74	826	90	15
	Kentucky	23	1032	100	70
	Maryland	72	1233	100	65
	Michigan	39	1258	90	25
	Minnesota	54	1206	97	65
	Nevada	51	1010	100	45
	North Dakota	51	953	65	65
	Ohio	37	1219	90	100
	Oregon	22	1204	75	35
	Tennessee	54	1093	90	10
	Washington	71	1169	100	45
	Wisconsin	41	1166	100	50
	Colorado	63	1322	70	60
	Delaware	67	1387	90	75
	Georgia	51	995	80	25
	Louisianna	51	1051	75	25
	Maine	39	1325	90	85
	Massachusetts	20	1281	100	75
"Early" Group (19)	Mississippi	30	861	70	35
	New Hampshire	62	1405	100	75
	New Jersey	32	1210	75	30
	New Mexico	62	1087	100	55
	New York	64	1260	85	25
	North Carolina	22	1163	100	45
	Pennsylvania	22	1254	100	35
	Rhode Island	54	1091	53	60
	Texas	68	1148	75	60
	Utah	59	1262	100	50
	Vermont	65	1040	90	35
	Virginia	26	1485	85	100
	West Virginia	54	884	85	0
	Arkansas	42	1036	60	0
	Florida	70	1058	75	25
	Hawaii	72	1089	75	10
"Late" Group (12)	Idaho	58	1235	100	25
	Indiana	47	938	46	0
	Missouri	27	1141	80	25
	Montana	61	1157	90	100
	Nebraska	71	1033	75	35
	Oklahoma	57	1074	90	40
	South Carolina	56	1166	100	40
	South Dakota	47	1336	90	100
	Wyoming	64	1007	86	35

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HIGHWAY SAFETY RESEARCH INSTITUTE

May, 1976

APPENDIX A

STATE FILE VARIABLE LIST

A computer file of state accident data and related variables has currently been completed and stored as a MIDAS internal file in the Michigan Terminal System (MTS). This file contains summary statistics on the 50 states and the District of Columbia, for the years 1972, 1973, and 1974, with the accident data updated to include those from 1975. In addition, all the variables have been recoded into nine regions as defined by the U.S. Bureau of the Census. A complete list of variables appears on page 6. This file is easily and economically accessed. The MIDAS package provides a number of analysis programs with require a minimum of computer knowledge to run.

The File. The state data is stored in an internal disk file with the name HSRI:STATEFILE and may be accessed by running the MIDAS program ($RUN STAT:MIDAS) and when the computer comes back with COMMAND? typing in READ INTERNAL FILE=HSRI:STATEFILE. This will result in the data from STATEFILE being read into the computer and analysis using any of the MIDAS commands may now be performed. To prevent accidental loss of any of the data in STATEFILE it may only be read into the computer and not written on. This means the results of any analysis may not be stored in STATEFILE. It is suggested that users of this data create their own file for storing the contents of STATEFILE and/or the results of analysis (such as new variables). New files for storage and subsequent reuse in MIDAS should be sequential and may be created by typing in the line:

$CREATE FILENAME TYPE=SEQ

The file name may be any name the user wishes and by creating a unique file the user may preserve the results of analysis as long as desired. The contents of any MIDAS internal file may be observed without reading, by using the command DISPLAY INTERNAL FILE=STATEFILE (or any other file name).

The MIDAS Program Package. The MIDAS programs available for analysis are well documented in the MIDAS manual, which accompany this memo. Each program, referred to as a command in MIDAS, is individually documented to the extent necessary to execute that particular analysis. Some of the more basic MIDAS commands and procedures which may be of particular interest are described below.

Variables in MIDAS. There are two variables types in MIDAS, analytic and categorical, each having a different function and a different set of analysis programs which may be run on them. Categorical variables in MIDAS represent code values or alphabetic names and, as such, are not generally appropriate for many analysis programs. For example, stratification of the data by regions may only be done on such categorical variables. There are five categorical variables in HSRI:STATEFILE:

Variable No.	Name
1	FIPS STATE CODE
57	STATE NAME
100	REGION CODES
101	STATE NUMBER IN REGION
157	REGION NAME

The FIPS code, region, and number within region are primarily for use in subsetting the data while the state and region names are for labeling output.

Analytic variables in MIDAS, representing the remaining 110 variables, are properly used in most analysis commands. These variables represent data such as population, number of fatal accidents, etc., and cannot be used directly in bivariate tables.

Creating New Variables in MIDAS. Analytic variables may be created in MIDAS using the TRANS command* and specifying both the indices of the old variable(s) to be used (e.g., VI, or variables=1-10) and the function to be performed on the old variable values. The simplest form of the TRANS command specifies an analytic function to be performed on the old variable values. For example:

```
TRANS V58=V3+V4
```

would create a new variable, V58, with values representing the sum of variables 3 and 4 for each state. This variable could then be written into the user's own file with the command:

```
WRITE INTERNAL FILE=FILE NAME   VARIABLE=58,
```

or written out at the terminal with the command:

```
WRITE FILE=*SINK* VARIABLE=58
```

The data may also be stratified into groups of states and there are TRANS functions available to standardize and rank the

*See p.127 MIDAS Manual

cases within each stratum. Variable 100, regions, has been provided to stratify the states geographically.

The CODE command operates like the TRANS command except it produces categorical variables.

The COMPUTE command also operates much like the TRANS command, producing new variables (if desired), however it operates on strata or groups of cases. Again the region variable (V100) may be used to stratify the data.

Output in MIDAS . The results of analysis in MIDAS may be stored in the user's internal file as a variable or written on the terminal. Two alphabetic variables have been provided to label output with state and/or region names. All variables have also been labeled, however MIDAS only allows eight character variable labels and the user is referred to the attached dictionary to decipher the variable labels.

To utilize the state (or region) names as labels for output the WRITE statement must be formatted. The state names are stored in A (alphanumeric) type fields of width 8 and thus the format statement must have an A8 field corresponding to the variable indices of the alphabetic variables (which are variables 57 and 157). Thus the entire write statement might appear as:

```
WRITE FILE=*SINK* VARIABLES=57,1,2 &
FORMAT=(A8,5X,F5.0,5X,F6.0)
```

where; A8 represents an 8 character alphanumeric field

5X represents 5 spaces

F5.0 represents a 4 digit variable (with an extra field space for the decimal point) and

& (ampersand) represents a line continuation

Note on Region Variables. The region variables in the MIDAS internal file STATEFILE were created so as to record 1 value for each state. Thus, all states in each region have the same value on region variables. When using the region variables for analysis it may be desired, so as not to weight the output by the number of states within each region, to filter for 1 state per region. Variable 101, number within region, allows the user to stratify for one state per region by setting STRATA=101:1 (i.e., the strata are state#1 in each region).

The following variable list represents the contents of HSRI:STATEFILE. Variables 1-57 contain state data and variables 100-157 represent region data. All region variables begin with the letter R in the variable label and most have the last letter truncated.

REFERENCES

U.S. Department of Commerce, Statistical Abstract of the United States, 1974, Bureau of the Census.

U.S. Department of Commerce, Statistical Abstract of the United States, 1973, Bureau of the Census.

U.S. Department of Transportation, Annual Report, National Traffic Safety Administration, 1974.

U.S. Department of Transportation, Annual Report, National Traffic Safety Administration, 1973.

U.S. Department of Transportation, Highway Statistics, Federal Highway Administration, 1972.

U.S. Department of Transportation, HIghway Statistics, Federal Highway Administration, 1973.

File Name = HSRI:STATEFILE

Variable No. and Label	Variable Name and Coding	Field Format & Width
Variables 1-57 are State Variables		
1.FIPSCODE	FIPS State Code	F2.0
2.72 POP	Population 1972 (estimated in thousands)	F5.0
3.73 POP	Population 1973 (estimated in thousands)	F5.0
4.72FATALS	Total Number Motor Vehicle Deaths, 1972	F4.0
5.73FATALS	Total Number Motor Vehicle Deaths, 1973	F4.0
6.UNDER 14	Population Under 14 Years Old (in thousands)	F4.0
7.14-17 YR	Population 14-17 Years Old (in thousands)	F4.0
8.18-20 YR	Population 18-20 Years Old (in thousands)	F4.0
9.21-44 YR	Population 21-44 Years Old (in thousands)	F4.0
10.45-64 YR	Population 45-64 Years Old (in thousands)	F4.0
11.65+ YRS	Population 65+ Years Old (in thousands)	F4.0
12.URBANPOP	Urban Population (in thousands, 1970 Census)	F5.0
13.RURALPOP	Rural Population (in thousands, 1970 Census)	F4.0
14.72TOTLIC	Estimated Total Number Licensed Drivers, 1972 (thousands)	F5.0
15.72MALELI	Estimated Number Male Licensed Drivers, 1972 (thousands)	F4.0
16.72FEMLIC	Estimated Number Female Licensed Drivers, 1972 (thousands)	F4.0

Variable No. and Label	Variable Name and Coding	Field Format & Width
17.73TOTLIC	Estimated Total Number Licensed Drivers, 1973 (thousands)	F5.0
18.73MALELI	Estimated Number Male Licensed Drivers, 1973 (thousands)	F4.0
19.73FEMLIC	Estimated Number Female Licensed Drivers, 1973 (thousands)	F4.0
20.72REGVEH	Total Number Motor Vehicle Registrations, 1972 (auto, truck, buses in thousands)	F5.0
21.72REGMC	Total Number Motorcycle Registrations, 1972 (thousands)	F3.0
22.73REGVEH	Total Number Motor Vehicle Registrations, 1973 (auto, truck, buses in thousands)	F5.0
23.73REGMC	Total Number Motorcycle Registrations, 1973 (thousands)	F3.0
24.73GALGAS	Gallons of Motor Fuel Consumed, 1973 (in millions)	F5.0
25.72URBRDS	Miles of Urban Roads & Streets, 1972	F5.0
26.72RURRDS	Miles of Rural Roads & Streets, 1972	F6.0
27.72SURFRD	Miles of Surfaced Roads, 1972 (in thousands)	F3.0
28.72UNSURF	Miles of Non-Surfaced Roads, 1972 (in thousands)	F2.0
29.73URBRDS	Miles of Urban Roads & Streets, 1973	F5.0
30.73RURRDS	Miles of Rural Roads & Streets, 1973	F6.0
31.73SURFRD	Miles of Surfaced Roads, 1973 (in thousands)	F3.0
32.73UNSURF	Miles of Non-surfaced Roads, 1973 (in thousands)	F2.0
33.AREASQMI	Total Square Mile Area (in thousands)	F3.0

Variable No. and Label	Variable Name and Coding	Field Format & Width
34.LANDAREA	Total Square Miles of Land Area (in thousands)	F3.0
35.AVE.TEMP	Normal Annual Average Temperature, 3rd Digit = Tenths (average of air ports within state)	F3.0
36.FREZDAYS	Mean Number of Days Temperature is 32° or Less (average of air ports within state)	F3.0
37.RAINDAYS	Annual Total Number of Days with Precipitation 0.01 Inches or More, 3rd Digit = Tenths	F3.0
38.70 MALES	Male Population, 1970 (in thousands)	F4.0
39.70 FEMS	Female Population, 1970 (in thousands)	F5.0
40.72TOTFAT	Estimated 1972 Total Motor Vehicle Traffic Fatalities	F4.0
41.72PEDFAT	Estimated Pedestrian Fatalities, 1972	F3.0
42.72BIKFAT	Estimated Bicycle Fatalities, 1972	F3.0
43.72MCFAT	Estimated Motorcycle Fatalities, 1972	F3.0
44.72OCCFAT	Estimated Motor Vehicle Occupant Fatalities, Including Drivers & Passengers, 1972	F4.0
45.73TOTFAT	Estimated Total Motor Vehicle Traffic Fatalities, 1973	F4.0
46.73PEDFAT	Estimated Pedestrian Fatalities, 1973	F3.0
47.73BIKFAT	Estimated Bicycle Fatalities, 1973	F3.0
48.73MCFAT	Estimated Motorcycle Fatalities, 1973	F3.0
49.73OCCFAT	Estimated Motor Vehicle Occupant Fatalities, Including Drivers & Passengers, 1973	F4.0
50.74TOTFAT	Estimated Total Motor Vehicle Traffic Fatalities, 1974	F4.0

Variable No. and Label	Variable Name and Coding	Field Format & Width
51. 74PEDFAT	Estimated Pedestrian Fatalities, 1974	F3.0
52. 74BIKFAT	Estimated Bicycle Fatalities, 1974	F3.0
53. 74MCFAT	Estimated Motorcycle Fatalities, 1974	F3.0
54. 74OCCFAT	Estimated Motor Vehicle Occupant Fatalities, Including Drivers & Occupants, 1974	F4.0
55. 72TOTRDS	Sum of Variables 25 & 26	
56. 73TOTRDS	Sum of Variables 29 & 30	
57. ST.NAME	State Name	A8
58. 73 MILES	Vehicle miles in 1973 (in millions), estimated from gasoline sales	
59. HALFSFAT	Fatalities, first 6 month 1975	
60. EST75FAT	Estimated 1975 fatalities	
61. DIFF34	1973 Fatalities minus 1974 fatalities (V45-V50)	
62. DIFF45	1974 Fatalities minus estimated 1975 fatalities (V50-V60)	
63. DIFF35	1973 fatalities minus estimated 1975 fatalities (V45-V60)	
64. FATRAT34	V61 divided by 1973 population (V3)	
65. FATRAT45	V62 divided by 1973 population (V3)	
66. FATRAT35	V63 divided by 1973 population (V3)	
67. RANKSV66	Ranking of V66 by state	
68. NORM67	V67 minus twenty five (25)	
69. ABS68	Absolute value of V68	
70. NORM66	V66 minus mean of V66 (.060203)	
71. ABS70	Absolute value of V70	
72. TRUCKFAT	Truck fatals, 1973	
73. Density	Population (1973) per square mile	
74. FAT POP	Fatalities (1973) divided by population (1973)	
75. RUR RD %	Percentage of rural roads	

76.	UNSURRD %	Percentage of unsurfaced roads	
77.	YOUNG %	Percentage of drivers under 20 years	
78.	ALLFAT %	Fatalities (1972+1973) divided by population (1972+1973), $\frac{V4 + V5}{V2 + V3}$	
79.	INVERS	Inverse of density $(\frac{1}{V73})$	
80.	FAT GAL	Fatalities (1973) divided by gasoline consumption (V24)	
81.	FAT MILE	Fatalities (1973) divided by vehicle miles (V58)	
82.	LOGDEN	Log_{10} (V73)	
83.	LOGINVER	Log_{10} (V79)	
84.	PMVI	0=None, 1=started between 1966 and 1974, 2=started before 1966 (only 31 valid cases as 0 is MIDAS missing data code)	
85.	PMVICAT	(V84+1) as a categorical variable	
86.	RPT CARD	DOT 1973, Report card total	
87.	DRIVED	DOT 1973, Driver education score	
88.	EMS	DOT 1973, EMS score	
89.	UVC%	Percent conformity with the Uniform Vehicle Code	
100.	REGIONS	9 Regions Defined by the U.S. Bureau of the Census	F1.0
101.	NO.INREG	State Number in Region	F1.0

Variables 102-156 are the Regional Sums of Variables 2-56 except V35-V37 which are region means

157.	REGNAME	Region Name	A8

DESCRIPTIVE MEASURES

VARIABLE	N	MINIMUM	MAXIMUM	MEAN	STD DEV
1.FIPSCODE	51	1.0000	56.000	28.961	15.833
2.72 POP	51	325.00	20411.	4082.9	4381.6
3.73 POP	51	330.00	20601.	4114.1	4397.2
4.72FATALS	51	59.000	4996.0	1090.9	1005.0
5.73FATALS	51	76.000	4905.0	1074.4	998.15
6.UNDER 14	51	89.000	4882.0	1008.8	1049.9
7.14-17 YR	51	29.000	1576.0	328.31	339.15
8.18-20 YR	51	21.000	1197.0	233.04	243.12
9.21-44 YR	51	109.00	6809.0	1281.7	1395.2
10.45-64 YR	51	46.000	4208.0	844.57	933.60
11.65+ YRS	51	8.0000	1987.0	418.20	451.70
12.URBANPOP	51	143.00	18136.	2928.7	3722.3
13.RURALPOP	51	0.	3363.0	1055.8	814.67
14.72TOTLIC	51	154.00	12650.	2321.8	2443.4
15.72MALELI	51	82.000	6954.0	1294.6	1371.6
16.72FEMLIC	51	72.000	5696.0	1027.2	1075.1
17.73TOTLIC	51	161.00	12775.	2384.9	2484.9
18.73MALELI	51	91.000	7023.0	1317.0	1385.1
19.73FEMLIC	51	70.000	5752.0	1067.9	1102.9
20.72REGVEH	51	149.00	12852.	2285.0	2404.4
21.72REGMC	51	4.0000	626.00	74.490	95.759
22.73REGVEH	51	172.00	13413.	2459.3	2517.6
23.73REGMC	51	5.0000	638.00	85.392	100.52
24.73GALGAS	51	0.	10758.	2147.1	2133.6
25.72URBRDS	51	424.00	50579.	12592.	12119.
26.72RURRDS	51	0.	.19997 +6	61657.	40261.
27.72SURFRD	51	1.0000	187.00	59.255	40.559
28.72UNSURF	51	0.	63.000	15.020	15.091
29.73URBRDS	51	433.00	53026.	12784.	12298.
30.73RURRDS	51	0.	.19846 +6	61861.	40253.

32.73UNSURF	51	0.	62.000	14.941	15.185
33.AREASQMI	51	0.	586.00	70.882	87.542
34.LANDAREA	51	0.	566.00	69.333	84.980
35.AVE.TEMP	51	403.00	766.00	542.55	83.170
36.FREZDAYS	51	0.	188.00	105.73	51.863
37.RAINDAYS	51	71.000	670.00	343.59	138.45
38.70 MALES	51	163.00	9817.0	1939.4	2092.0
39.70 FEMS	51	137.00	10136.	2045.0	2222.4
40.72TOTFAT	51	55.000	4936.0	1077.4	984.79
41.72PEDFAT	51	4.0000	967.00	174.78	197.37
42.72BIKFAT	51	0.	191.00	21.765	30.160
43.72MCFAT	51	3.0000	612.00	55.471	88.953
44.72OCCFAT	51	32.000	3376.0	825.20	709.09
45.73TOTFAT	51	75.000	4888.0	1073.7	997.45
46.73PEDFAT	51	6.0000	863.00	176.94	196.32
47.73BIKFAT	51	0.	113.00	20.569	24.821
48.73MCFAT	51	2.0000	452.00	62.784	75.579
49.73OCCFAT	51	37.000	3460.0	813.45	723.29
50.74TOTFAT	51	78.000	3983.0	892.82	818.00
51.74PEDFAT	51	6.0000	711.00	147.61	164.32
52.74BIKFAT	51	1.0000	114.00	21.137	24.246
53.74MCFAT	51	2.0000	492.00	63.373	79.067
54.74OCCFAT	51	32.000	2666.0	660.71	570.30
55.72TOTRDS	51	1099.0	.25055 +6	74249.	47633.
56.73TOTRDS	51	1099.0	.25149 +6	74645.	47858.
57.ST. NAME	51	-.51925+46	-13.235	-.31913+45	-0.
58.73MILES	51	1628.0	.12985 +6	25658.	25148.
59.HALF5FAT	51	31.000	1976.0	412.02	410.59
60.EST75FAT	51	64.883	4135.8	862.36	859.36
61.DIFF34	51	-32.000	905.00	180.92	192.86
62.DIFF45	51	-709.91	286.41	30.466	134.48

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
64.FATRAT34	51	-.30303 -1	.11419	.44003 -1	.34321 -1
65.FATRAT45	51	-.60193 -1	.99035 -1	.16200 -1	.30356 -1
66.FATRAT35	51	-.45452 -1	.18079	.60203 -1	.45692 -1
67.RANKSV66	51	1.0000	51.000	26.000	14.866
68.NORM67	51	-24.000	26.000	1.0000	14.866
69.ABS68	51	0.	26.000	12.765	7.4715
70.NORM66	51	-.10565	.12058	-.13565 -6	.45692 -1
71.ABS70	51	.11647 -2	.12058	.35591 -1	.28208 -1
72.TRUCKFAT	38	2.0000	315.00	73.368	75.620
73.DENSITY	50	.56314	973.00	145.65	220.46
74.FAT POP	51	.10188	.57685	.29458	.10261
75.RUR RD %	51	0.	.97295	.78734	.21203
76.UNSURRD%	51	0.	.69041	.19613	.18941
77.YOUNG %	51	.12425	.16061	.13975	.80015 -2
78.ALLFAT %	51	.99466 -1	.56141	.29960	.10416
79.INVERS	50	.10277 -2	1.7758	.72410 -1	.25246
80.FAT GAL	50	.55185	1.6097	1.0524	.22213
81.FAT MILE	51	.23936 -1	.67385 -1	.43994 -1	.10808 -1
82.LOGDEN	50	-.24938	2.9881	1.7658	.65645
83.LOGINVER	50	-2.9881	.24938	-1.7658	.65645
84.PMVI	31	1.0000	2.0000	1.6129	.49514
85.PMVICAT	51	1.0000	3.0000	1.9804	.88295
86.RPT CARD	51	739.00	1485.0	1129.5	162.82
87.DRIVED	51	43.000	100.00	84.569	15.602
88.EMS	51	0.	100.00	46.373	27.624
89.UVC%	51	20.000	74.000	49.843	15.769
100.REGIONS	51	1.0000	9.0000	5.1176	2.5349
101.NO.INREG	51	1.0000	9.0000	3.6471	2.1244
102.REGPOP72	51	8880.0	40791.	22204.	10964.
103.REGPOP73	51	9150.0	40896.	22419.	10997.
104.REGFAT72	51	2168.0	10255.	6229.6	2749.1

106.RUNDER14	51	2412.0	10309.	5512.1	2663.2
107.R14-17YR	51	781.00	3362.0	1794.4	864.80
108.R18-20YR	51	562.00	2325.0	1282.9	611.12
109.R21-44YR	51	2895.0	12649.	6996.9	3457.3
110.R45-64YR	51	1721.0	8481.0	4559.4	2332.6
111.R65+YR	51	778.00	4044.0	2275.3	1105.8
112.RURBPOP	51	6054.0	30405.	15514.	8475.3
113.RRURPOP	51	2226.0	11148.	6088.6	3256.5
114.R72TOTLI	51	5545.0	22921.	12813.	6066.6
115.R72MALLI	51	3127.0	12919.	7121.8	3423.0
116.R72FEMLI	51	2418.0	10002.	5691.2	2648.6
117.R73TOTLI	51	5778.0	23407.	13197.	6221.9
118.R73MALLI	51	3203.0	13141.	7263.8	3489.5
119.R73FEMLI	51	2575.0	10266.	5933.4	2737.6
120.R72REGVE	51	6241.0	22167.	12737.	5585.8
121.R72REGMC	51	161.00	803.00	422.59	204.63
122.R73REGVE	51	6587.0	23574.	13701.	6127.2
123.R73REGMC	51	194.00	859.00	486.71	220.41
124.R73GALGS	51	5469.0	20451.	12032.	5404.6
125.R72URBRD	51	36067.	.11926 +6	72529.	30139.
126.R72RURRD	51	59347.	.71127 +6	.37075 +6	.18202 +6
127.R72SURRD	51	98.000	641.00	344.59	164.20
128.R72UNSUR	51	6.0000	244.00	98.882	76.934
129.R73URBRD	51	36859.	.11970 +6	73516.	29518.
130.R73RURRD	51	57461.	.70947 +6	.37227 +6	.18202 +6
131.R73SURRD	51	97.000	644.00	346.24	164.73
132.R73UNSUR	51	5.0000	245.00	98.843	77.113
133.REG SQMI	51	66.000	916.00	432.61	299.31
134.RAREALND	51	63.000	891.00	423.22	294.98
135.RAVETEMP	51	475.67	638.50	542.55	55.717
136.RFREZDAY	51	49.500	147.00	105.73	38.603

138.R70 MALE	51	4102.0	19602.	10528.	5245.3
139.R70 FEMS	51	4180.0	20649.	11071.	5570.0
140.R72TOTFA	51	2171.0	10184.	6157.4	2703.0
141.R72PEDFA	51	438.00	1851.0	974.22	572.39
142.R72BIKFA	51	44.000	232.00	123.18	65.419
143.R72MCFAT	51	125.00	707.00	307.04	168.85
144.R72DCCFA	51	1524.0	7805.0	4752.1	2051.3
145.R73TOTFA	51	2207.0	10093.	6130.4	2690.6
146.R73PEDFA	51	456.00	1832.0	991.84	533.01
147.R73BIKFA	51	46.000	251.00	114.82	71.664
148.R73MCFAT	51	186.00	698.00	350.67	153.44
149.R73DCCFA	51	1513.0	7657.0	4673.0	2021.4
150.R74TOTFA	51	1967.0	8637.0	5117.5	2293.5
151.R74PEDFA	51	369.00	1579.0	831.98	477.93
152.R74BIKFA	51	51.000	226.00	121.02	71.942
153.R74MCFAT	51	146.00	623.00	359.67	170.67
154.R74DCCFA	51	1401.0	6312.0	3804.8	1632.3
155.R72TOTRD	51	.10477 +6	.77892 +6	.44328 +6	.18882 +6
156.R73TOTRD	51	.10453 +6	.77790 +6	.44579 +6	.18865 +6
157.REG NAME	51	-.16923+46	-.31061 +6	-.36485+45	-0.

```
#COMMENT:  THE FOLLOWING IS AN EXAMPLE OF A DATA RUN ON HSRI:STATEFILE
#RUN STAT:MIDAS
#EXECUTION BEGINS


 M I D A S
 STATISTICAL RESEARCH LABORATORY
 UNIVERSITY OF MICHIGAN
 09:00:19
 SEP 15, 1976

 ** DELETE, DISPLAY, READ CHANGED -- $COPY STAT:NEWS(LAST) **


 COMMAND
?READ INTERNAL FILE=HSRI:STATEFILE VARIABLES=ALL


 READ OBSERVATIONS
 FROM INTERNAL FILE "HSRI:STATEFILE"

 51 CASES READ FOR 147 VARIABLES


 COMMAND
STOP
 USE $RES TO RE-ENTER MIDAS
#COMMENT: WE WILL NOW CREATE NEW ANALYTIC  VARIABLES
#$RES


 COMMAND
?TRANS V200=V40/V33 LABEL=72FAT/MI

 ERROR -- INVALID LABELING:  "72FAT/MI"
 ENTER NEW VALUE FOR LABEL FOR THE RESULT VARIABLE(S)
?72FAT MI

 ERROR -- INVALID LABELING:  "72FAT MI"
 ENTER NEW VALUE FOR LABEL FOR THE RESULT VARIABLE(S)
?FATMI72


 DIVIDE TRANSFORMATION

      VARIABLE  TOTAL  VALID   MISS

  200.FATMI72       51      50      1


 COMMAND
?STOP
 USE $RES TO RE-ENTER MIDAS
#COMMENT:  NEW MIDAS RULES DO NOT ALLOW SPECIAL CHARACTERS OR DIGITS
#COMMENT:  IN SOME POSITIONS OF THE VARIABLE LABELS
#$RES
```

```
 COMMAND
?TRANS V201=V45/V33 LABEL=FATMI73


 DIVIDE TRANSFORMATION

      VARIABLE  TOTAL  VALID   MISS

  201.FATMI73       51      50       1


 COMMAND
?TRANS V202=V50/V33 LABEL=FATMI74


 DIVIDE TRANSFORMATION

      VARIABLE  TOTAL  VALID   MISS

  202.FATMI74       51      50       1


 COMMAND
?TRANS V203=V40/V2 LABEL=FA POP72


 DIVIDE TRANSFORMATION

      VARIABLE  TOTAL  VALID   MISS

  203.FA POP72      51      51       0


 COMMAND
?TRANS V204=V45/V2 LABEL=FA POP73


 DIVIDE TRANSFORMATION

      VARIABLE  TOTAL  VALID   MISS

  204.FA POP73      51      51       0


 COMMAND
?STOP
 USE $RES TO RE-ENTER MIDAS
#COMMENT: THE ABOVE 5 VARIABLES HAVE BEEN CREATED BUT HAVE NOT BEEN
#COMMENT: STORED.  THEY MUST BE WRITTEN INTO A FILE  TO STORE THEM
#COMMENT: OR THEY WILL BE LOST WHEN THE USER SIGNS OFF
#$RES


 COMMAND
?WRITE FILE=-TEMP VARIABLES=57,200-204 FORMAT=(A8,5F8.3)
```

```
WRITE OBSERVATIONS
VARIABLES BY CASE

51 CASES WRITTEN FOR 6 VARIABLES


COMMAND
?STOP
USE $RES TO RE-ENTER MIDAS
#COMMENT: -TEMP IS A TEMPORARY FILE WHICH WILL BE DESTROYED WHEN I SIGN
#COMMENT: OFF.  THE F8.3 FORMAT ALLOWS ROOM FOR 3 DECIMAL PLACES
#COMMENT:    NOTE: THIS IS NOT BEING DONE IN MIDAS
#LIST -TEMP
```

		V57	V200	V201	V202	V203	V204
>	1	ALABAMA	23.981	23.808	18.808	.354	.352
>	2	ALASKA	.094	.128	.145	.169	.231
>	3	ARIZONA	7.140	8.325	6.263	.415	.483
>	4	ARKANSAS	14.283	12.547	9.925	.377	.331
>	5	CALIF.	31.044	30.742	25.050	.242	.239
>	6	COLORADO	7.067	6.481	5.904	.311	.285
>	7	CONN.	93.600	102.200	80.000	.152	.166
>	8	DELEWARE	65.500	62.500	56.000	.229	.219
>	9	D. OF C.	-0.	-0.	-0.	.096	.101
>	10	FLORIDA	42.254	45.017	38.356	.329	.362
>	11	GEORGIA	31.102	31.864	26.000	.388	.397
>	12	HAWAII	24.500	23.000	21.167	.190	.169
>	13	IDAHO	3.560	4.143	3.917	.396	.461
>	14	ILLINOIS	37.857	42.000	35.232	.169	.209
>	15	INDIANA	43.000	42.333	32.333	.293	.292
>	16	IOWA	15.679	14.500	12.268	.304	.282
>	17	KANSAS	8.024	7.622	6.244	.290	.276
>	18	KENTUCKY	27.225	27.950	19.750	.329	.338
>	19	LA.	23.061	23.327	17.163	.302	.306
>	20	MAINE	7.727	7.485	6.485	.249	.241
>	21	MARYLAND	72.545	74.455	66.727	.197	.202
>	22	MASS.	124.625	127.125	120.500	.172	.175
>	23	MICHIGAN	39.293	37.966	31.845	.253	.244
>	24	MINN.	12.262	12.202	9.952	.266	.264
>	25	MISS.	19.313	18.604	13.417	.411	.396
>	26	MISSOURI	20.786	20.400	14.671	.307	.301
>	27	MONTANA	2.673	2.190	2.027	.549	.450
>	28	NEBRASKA	6.247	5.623	5.039	.315	.283
>	29	NEVADA	2.333	2.387	1.937	.486	.497
>	30	NEW HAMP	19.778	16.333	18.444	.230	.190
>	31	NEW JER.	164.125	169.750	138.750	.179	.185
>	32	NEW MEX.	4.828	5.246	4.426	.547	.595
>	33	NEW YORK	63.380	60.500	50.680	.172	.165
>	34	N CAROL.	37.434	35.566	29.547	.380	.361
>	35	N DAKOTA	2.944	2.930	2.268	.330	.328
>	36	OHIO	56.171	57.439	47.927	.215	.220
>	37	OKLAHOMA	11.914	11.371	10.729	.317	.302
>	38	OREGON	7.588	6.619	6.948	.337	.294
>	39	PENNA.	52.711	54.267	47.867	.199	.205
>	40	RHODE IS	122.000	131.000	96.000	.126	.135
>	41	S CAROL.	35.484	31.097	27.903	.409	.359
>	42	S DAKOTA	3.818	3.701	2.974	.432	.419
>	43	TENN.	33.738	34.238	28.952	.348	.353
>	44	TEXAS	13.176	13.738	10.989	.303	.316
>	45	UTAH	4.459	4.247	2.694	.336	.320
>	46	VERMONT	15.100	15.400	12.700	.328	.335

```
>     47      VIRGINIA  30.390  29.561  25.488     .261     .254
>     48      WASH.     12.603  11.353  11.059     .251     .226
>     49      W. VA.    21.875  19.833  18.333     .292     .265
>     50      WIS.      20.875  20.500  16.214     .258     .254
>     51      WYOMING    2.010   1.918   1.990     .569     .543
#END OF FILE
#COMMENT: TO SORT THE DATA IN ASCENDING ORDER THE FOLLOWING STEPS ARE
#COMMENT: NECESSARY*       THIS IS NOT BEING DONE IN MIDAS
#LIST -TEMP(22,22)+SFOU:GUIDE
>     22      MASS.     124.625 127.125 120.500     .172     .175
>      1      ....5...10....5...20....5...30....5...40....5...50....5...60..
#END OF FILE
#COMMENT: TO SORT, THE LINE WITH THE WIDEST DATA MUST BE SCANNED TO
#COMMENT: DETERMINE WHERE THE COLUMN WHICH IS TO BE SORTED STARTS. IN
#COMMENT: THIS CASE WE WILL SORT COLUMN 1 OF DATA WHICH STARTS IN
#COMMENT: COLUMN 10. NOTE: RUNNING *SORT WILL CAUSE ME TO LOSE THE
#COMMENT: ACTIVE DATA SET IN MIDAS AND WILL REQUIRE ME TO RECREATE
#COMMENT: ANY VARIABLES WHICH HAVE NOT BEEN STORED
#RUN *SORT
#EXECUTION BEGINS
 ENTER THE CONTROL STATEMENT.
 SORT=CH,A,10,7 INPUT=-TEMP,F,80,80 OUTPUT=-TEMP2,F,80,80 MNR=51
 SORT=CH,A,10,7 INPUT=-TEMP,F,80,80 OUTPUT=-TEMP2,F,80,80 MNR=51
 STATISTICS:       51/     0
#EXECUTION TERMINATED
#LIST -TEMP2  V57        V200    V201    V202      V203     V204
>      1      ALASKA      .094    .128    .145     .169     .231
>      2      WYOMING    2.010   1.918   1.990     .569     .543
>      3      NEVADA     2.333   2.387   1.937     .486     .497
>      4      MONTANA    2.673   2.190   2.027     .549     .450
>      5      N DAKOTA   2.944   2.930   2.268     .330     .328
>      6      IDAHO      3.560   4.143   3.917     .396     .461
>      7      S DAKOTA   3.818   3.701   2.974     .432     .419
>      8      UTAH       4.459   4.247   2.694     .336     .320
>      9      NEW MEX.   4.828   5.246   4.426     .547     .595
>     10      NEBRASKA   6.247   5.623   5.039     .315     .283
>     11      COLORADO   7.067   6.481   5.904     .311     .285
>     12      ARIZONA    7.140   8.325   6.263     .415     .483
>     13      OREGON     7.588   6.619   6.948     .337     .294
>     14      MAINE      7.727   7.485   6.485     .249     .241
>     15      KANSAS     8.024   7.622   6.244     .290     .276
>     16      D. OF C.  -0.     -0.     -0.        .096     .101
>     17      OKLAHOMA  11.914  11.371  10.729     .317     .302
>     18      MINN.     12.262  12.202   9.952     .266     .264
>     19      WASH.     12.603  11.353  11.059     .251     .226
>     20      TEXAS     13.176  13.738  10.989     .303     .316
>     21      ARKANSAS  14.283  12.547   9.925     .377     .331
>     22      VERMONT   15.100  15.400  12.700     .328     .335
>     23      IOWA      15.679  14.500  12.268     .304     .282
>     24      MISS.     19.313  18.604  13.417     .411     .396
>     25      NEW HAMP  19.778  16.333  18.444     .230     .190
>     26      MISSOURI  20.786  20.400  14.671     .307     .301
>     27      WIS.      20.875  20.500  16.214     .258     .254
>     28      W. VA.    21.875  19.833  18.333     .292     .265
>     29      LA.       23.061  23.327  17.163     .302     .306
>     30      ALABAMA   23.981  23.808  18.808     .354     .352
>     31      HAWAII    24.500  23.000  21.167     .180     .169
>     32      KENTUCKY  27.225  27.950  19.750     .329     .338
>     33      VIRGINIA  30.390  29.561  25.488     .261     .254
```

```
>     34     CALIF.     31.044  30.742  25.050      .242      .239
>     35     GEORGIA    31.102  31.864  26.000      .388      .397
>     36     TENN.      33.738  34.238  28.952      .348      .353
>     37     S CAROL.   35.484  31.097  27.903      .409      .359
>     38     N CAROL.   37.434  35.566  29.547      .380      .361
>     39     ILLINOIS   37.857  42.000  35.232      .189      .209
>     40     MICHIGAN   39.293  37.966  31.845      .253      .244
>     41     FLORIDA    42.254  45.017  38.356      .339      .362
>     42     INDIANA    43.000  42.833  32.333      .293      .292
>     43     PENNA.     52.711  54.267  47.867      .199      .205
>     44     OHIO       56.171  57.439  47.927      .215      .220
>     45     NEW YORK   63.380  60.500  50.680      .173      .165
>     46     DELEWARE   65.500  62.500  56.000      .229      .219
>     47     MARYLAND   72.545  74.455  66.727      .197      .202
>     48     CONN.      93.600 102.200  80.000      .152      .166
>     49     RHODE IS  122.000 131.000  96.000      .126      .135
>     50     MASS.     124.625 127.125 120.500      .172      .175
>     51     NEW JER.  164.125 169.750 138.750      .179      .185
#END OF FILE
#COMMENT: TH D OF C IS OUT OF ORDER DUE TO THE '-' SIGN. THE     '-'
#COMMENT: SIGN OCCURRED BECAUSE WE DIVIDED BY THE LAND AREA AND THE
#COMMENT: D OF C HAS 0 THOUSAND SQUARE MILES. -0 IS THE MIDAS MISSING
#COMMENT: DATA CODE.   NOW LETS SORT THE FOURTH COLUMN OF DATA.
#LIST -TEMP(22,22)+SFQU:GUIDE
>     22     MASS.     124.625 127.125 120.500      .172      .175
>      1     ....5...10....5...20....5...30....5...40....5...50....5...60...
#END OF FILE
#RUN *SORT
#EXECUTION BEGINS
 ENTER THE CONTROL STATEMENT.
 SORT=CH,A,37,4 IN=-TEMP,F,80,80 OUT=-TEMP3,F,80,80 MNR=51
 SORT=CH,A,37,4 IN=-TEMP,F,80,80 OUT=-TEMP3,F,80,80 MNR=51
 STATISTICS:        51/       0
#EXECUTION TERMINATED
                   V57      V200    V201     V202        V203      V204
#LIST -TEMP3
>      1     D. OF C.    -0.      -0.      -0.        .096      .101
>      2     RHODE IS  122.000 131.000  96.000      .126      .135
>      3     CONN.      93.600 102.200  80.000      .152      .166
>      4     ALASKA       .094    .128    .145      .169      .231
>      5     MASS.     124.625 127.125 120.500      .172      .175
>      6     NEW YORK   63.380  60.500  50.680      .173      .165
>      7     NEW JER.  164.125 169.750 138.750      .179      .185
>      8     HAWAII     24.500  23.000  21.167      .180      .169
>      9     ILLINOIS   37.857  42.000  35.232      .189      .209
>     10     MARYLAND   72.545  74.455  66.727      .197      .202
>     11     PENNA.     52.711  54.267  47.867      .199      .205
>     12     OHIO       56.171  57.439  47.927      .215      .220
>     13     DELEWARE   65.500  62.500  56.000      .229      .219
>     14     NEW HAMP   19.778  16.333  18.444      .230      .190
>     15     CALIF.     31.044  30.742  25.050      .242      .239
>     16     MAINE       7.727   7.485   6.485      .249      .241
>     17     WASH.      12.603  11.353  11.059      .251      .226
>     18     MICHIGAN   39.293  37.966  31.845      .253      .244
>     19     WIS.       20.875  20.500  16.214      .258      .254
>     20     VIRGINIA   30.390  29.561  25.488      .261      .254
>     21     MINN.      12.262  12.202   9.952      .266      .264
>     22     KANSAS      8.024   7.622   6.244      .290      .276
>     23     W. VA.     21.875  19.833  18.333      .292      .265
```

>	24	INDIANA	43.000	42.833	32.333	.293	.292
>	25	LA.	23.061	23.327	17.163	.302	.306
>	26	TEXAS	13.176	13.738	10.989	.303	.316
>	27	IOWA	15.679	14.500	12.268	.304	.282
>	28	MISSOURI	20.786	20.400	14.671	.307	.301
>	29	COLORADO	7.067	6.481	5.904	.311	.285
>	30	NEBRASKA	6.247	5.623	5.039	.315	.283
>	31	OKLAHOMA	11.914	11.371	10.729	.317	.302
>	32	VERMONT	15.100	15.400	12.700	.328	.335
>	33	KENTUCKY	27.225	27.950	19.750	.329	.338
>	34	N DAKOTA	2.944	2.930	2.268	.330	.328
>	35	UTAH	4.459	4.247	2.694	.336	.320
>	36	OREGON	7.588	6.619	6.948	.337	.294
>	37	FLORIDA	42.254	45.017	33.356	.339	.362
>	38	TENN.	33.738	34.238	28.952	.348	.353
>	39	ALABAMA	23.981	23.808	18.808	.354	.352
>	40	ARKANSAS	14.283	12.547	9.925	.377	.331
>	41	N CAROL.	37.434	35.566	29.547	.380	.361
>	42	GEORGIA	31.102	31.864	26.000	.388	.397
>	43	IDAHO	3.560	4.143	3.917	.396	.461
>	44	S CAROL.	35.484	31.097	27.903	.409	.359
>	45	MISS.	19.313	18.604	13.417	.411	.396
>	46	ARIZONA	7.140	8.225	6.263	.415	.482
>	47	S DAKOTA	3.818	3.701	2.974	.432	.419
>	48	NEVADA	2.333	2.387	1.937	.486	.497
>	49	NEW MEX.	4.828	5.246	4.426	.547	.595
>	50	MONTANA	2.673	2.190	2.027	.549	.450
>	51	WYOMING	2.010	1.918	1.990	.569	.543

#END OF FILE
#COMMENT: LET'S SORT THE FIFTH COLUMN

#RUN *SORT
#EXECUTION BEGINS
ENTER THE CONTROL STATEMENT.
SORT=CH,A,45,4 IN=-TEMP,F,80,80 OUT=-TEMP4,F,80,80 MNR=51
SORT=CH,A,45,4 IN=-TEMP,F,80,80 OUT=-TEMP4,F,80,80 MNR=51
STATISTICS: 51/ 0
#EXECUTION TERMINATED
#LIST -TEMP4

		V57	V200	V201	V202	V203	V204
>	1	D. OF C.	-0.	-0.	-0.	.096	.101
>	2	RHODE IS	122.000	131.000	96.000	.126	.135
>	3	NEW YORK	63.380	60.500	50.680	.173	.165
>	4	CONN.	93.600	102.200	80.000	.152	.166
>	5	HAWAII	24.500	23.000	21.167	.180	.169
>	6	MASS.	124.625	127.125	120.500	.172	.175
>	7	NEW JER.	164.125	169.750	138.750	.179	.185
>	8	NEW HAMP	19.778	16.333	18.444	.230	.190
>	9	MARYLAND	72.545	74.455	66.727	.197	.202
>	10	PENNA.	52.711	54.267	47.667	.199	.205
>	11	ILLINOIS	37.857	42.000	35.232	.189	.209
>	12	DELEWARE	65.500	62.500	56.000	.229	.219
>	13	OHIO	56.171	57.439	47.927	.215	.220
>	14	WASH.	12.603	11.353	11.059	.251	.226
>	15	ALASKA	.094	.128	.145	.169	.231

>	16	CALIF.	31.044	30.742	25.050	.242	.239
>	17	MAINE	7.727	7.485	6.485	.249	.241
>	18	MICHIGAN	39.293	37.966	31.845	.253	.244
>	19	WIS.	20.875	20.500	16.214	.258	.254
>	20	VIRGINIA	30.390	29.561	25.488	.261	.254
>	21	MINN.	12.262	12.202	9.952	.266	.264
>	22	W. VA.	21.875	19.833	18.333	.292	.265
>	23	KANSAS	8.024	7.622	6.244	.290	.276
>	24	IOWA	15.679	14.500	12.268	.304	.282
>	25	NEBRASKA	6.247	5.623	5.039	.315	.283
>	26	COLORADO	7.067	6.481	5.904	.311	.285
>	27	INDIANA	43.000	42.833	32.333	.293	.292
>	28	OREGON	7.588	6.619	6.948	.337	.294
>	29	MISSOURI	20.786	20.400	14.671	.307	.301
>	30	OKLAHOMA	11.914	11.371	10.729	.317	.302
>	31	LA.	23.061	23.327	17.163	.302	.306
>	32	TEXAS	13.176	13.738	10.989	.303	.316
>	33	UTAH	4.459	4.247	2.694	.336	.320
>	34	N DAKOTA	2.944	2.930	2.268	.330	.328
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>	36	VERMONT	15.100	15.400	12.700	.328	.335
>	37	KENTUCKY	27.225	27.950	19.750	.329	.338
>	38	ALABAMA	23.981	23.808	18.808	.354	.352
>	39	TENN.	33.738	34.238	28.952	.348	.353
>	40	S CAROL.	35.484	31.097	27.903	.409	.359
>	41	N CAROL.	37.434	35.566	29.547	.380	.361
>	42	FLORIDA	42.254	45.017	38.356	.339	.362
>	43	MISS.	19.313	18.604	13.417	.411	.396
>	44	GEORGIA	31.102	31.864	26.000	.388	.397
>	45	S DAKOTA	3.818	3.701	2.974	.432	.419
>	46	MONTANA	2.673	2.190	2.027	.549	.450
>	47	IDAHO	3.560	4.143	3.917	.396	.461
>	48	ARIZONA	7.140	8.325	6.263	.415	.483
>	49	NEVADA	2.333	2.387	1.937	.486	.497
>	50	WYOMING	2.010	1.918	1.990	.569	.543
>	51	NEW MEX.	4.828	5.246	4.426	.547	.595

```
#END OF FILE
#COMMENT: FOR AN EXAMPLE OF MIDAS OUTPUT AND FORMATTING AND TO
#COMMENT: SHOW THE CODE VALUES OF THE CATEGORICAL VARIABLES IN
#COMMENT: HSRI:STATEFILE, NOTE THE FOLLOWING;
#RUN STAT:MIDAS
#EXECUTION BEGINS


 M I D A S
 STATISTICAL RESEARCH LABORATORY
 UNIVERSITY OF MICHIGAN
 09:49:01
 SEP 15, 1976


 COMMAND
?READ INTERNAL FILE=HSRI:STATEFILE VARIABLES=1,57,157,100,101
```

```
READ OBSERVATIONS
FROM INTERNAL FILE "HSRI:STATEFILE"

51 CASES READ FOR 5 VARIABLES


COMMAND
?WRITE BYSTRATA STRATA=V100 VAR=57,1,157,100,101 FORMAT=(A8,5X,F3,&
?5X,A8,2F2) FILE=*SINK

ERROR -- INVALID FILENAME:  "*SINK"
ENTER NEW VALUE FOR FILE TO RECEIVE DATA OR  *  TO WRITE DATA HERE
?*


WRITE OBSERVATIONS  <1> REGIONS:1
VARIABLES BY CASE
CONN.          9.      NEW ENG 1.1.
MAINE         23.      NEW ENG 1.2.
MASS.         25.      NEW ENG 1.3.
NEW HAMP      33.      NEW ENG 1.4.
RHODE IS      44.      NEW ENG 1.5.
VERMONT       50.      NEW ENG 1.6.

6 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <2> REGIONS:2
VARIABLES BY CASE
NEW JER.      34.      MID ATLA2.1.
NEW YORK      36.      MID ATLA2.2.
PENNA.        42.      MID ATLA2.3.

3 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <3> REGIONS:3
VARIABLES BY CASE
ILLINOIS      17.      E.N. CEN3.1.
INDIANA       18.      E.N. CEN3.2.
MICHIGAN      26.      E.N. CEN3.3.
OHIO          39.      E.N. CEN3.4.
WIS.          55.      E.N. CEN3.5.

5 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <4> REGIONS:4
VARIABLES BY CASE
IOWA          19.      W.N. CEN4.1.
KANSAS        20.      W.N. CEN4.2.
MINN.         27.      W.N. CEN4.3.
MISSOURI      29.      W.N. CEN4.4.
NEBRASKA      31.      W.N. CEN4.5.
N DAKOTA      38.      W.N. CEN4.6.
S DAKOTA      46.      W.N. CEN4.7.

7 CASES WRITTEN FOR 5 VARIABLES
```

```
WRITE OBSERVATIONS  <5> REGIONS:5
VARIABLES BY CASE
DELEWARE       10.       S. ATLAN5.1.
D. OF C.       11.       S. ATLAN5.2.
FLORIDA        12.       S. ATLAN5.3.
GEORGIA        13.       S. ATLAN5.4.
MARYLAND       24.       S. ATLAN5.5.
N CAROL.       37.       S. ATLAN5.6.
S CAROL.       45.       S. ATLAN5.7.
VIRGINIA       51.       S. ATLAN5.8.
W. VA.         54.       S. ATLAN5.9.

9 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <6> REGIONS:6
VARIABLES BY CASE
ALABAMA         1.       E.S. CEN6.1.
KENTUCKY       21.       E.S. CEN6.2.
MISS.          28.       E.S. CEN6.3.
TENN.          47.       E.S. CEN6.4.

4 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <7> REGIONS:7
VARIABLES BY CASE
ARKANSAS        5.       W.S. CEN7.1.
LA.            22.       W.S. CEN7.2.
OKLAHOMA       40.       W.S. CEN7.3.
TEXAS          48.       W.S. CEN7.4.

4 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <8> REGIONS:8
VARIABLES BY CASE
ARIZONA         4.       MOUNTAIN8.1.
COLORADO        8.       MOUNTAIN8.2.
IDAHO          16.       MOUNTAIN8.3.
MONTANA        30.       MOUNTAIN8.4.
NEVADA         32.       MOUNTAIN8.5.
NEW MEX.       35.       MOUNTAIN8.6.
UTAH           49.       MOUNTAIN8.7.
WYOMING        56.       MOUNTAIN8.8.

8 CASES WRITTEN FOR 5 VARIABLES


WRITE OBSERVATIONS  <9> REGIONS:9
VARIABLES BY CASE
ALASKA          2.       PACIFIC 9.1.
CALIF.          6.       PACIFIC 9.2.
HAWAII         15.       PACIFIC 9.3.
OREGON         41.       PACIFIC 9.4.
WASH.          53.       PACIFIC 9.5.

5 CASES WRITTEN FOR 5 VARIABLES
```