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ANALYSIS AND REPORTING OF BLOOD ALCOHOL CONCENTRATIONS
OF MICHIGAN TRAFFIC FATALITIES

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NOTICES

The work reported herein was conducted by the Highway Safety Research Institute, The University of Michigan, for and under the sponsorship of the Office of Highway Safety Planning, Department of State Police, State of Michigan from February 1, 1972 to October 31, 1972. The study was undertaken to determine the extent to which blood alcohol concentration data are collected on persons involved in Michigan traffic fatalities and to recommend appropriate changes in policies and procedures based on the findings.

The participation of the Safety and Traffic Division, Michigan State Police, has been indispensable in conducting this study, and the cooperation of its personnel is gratefully acknowledged. The findings, conclusions, and recommendations contained herein are solely those of the authors, however, and no endorsement of the Division or of the Office of Highway Safety Planning is implied.

ANALYSIS AND REPORTING OF BLOOD ALCOHOL CONCENTRATIONS OF MICHIGAN TRAFFIC FATALITIES

INTRODUCTION

This study, under sponsorship of Michigan's Office of Highway Safety Planning (OHSP), was undertaken to determine the extent to which blood alcohol concentration (BAC) data are collected on fatalities and surviving drivers in Michigan fatal crashes. It should be viewed as a companion document to the earlier Filkins-Minahan report* on closely related topics, particularly with respect to the recommendations contained herein.

Selected data for Michigan traffic fatal crashes occurring in the January-June, 1972 period were collected, coded, and transmitted to HSRI via punched cards by the Safety and Traffic Division, Michigan State Police (MSP). The data set is defined in Appendix A. The sources of these data are the UD-10's (the State of Michigan Official Accident Report form) and the follow-up cards used by MSP in connection with this project.

The data set includes all drivers in fatal crashes, both living and dead, and pedestrian and pedalcyclist fatalities. Excluded are passenger fatalities, although the drivers of crashes in which passengers died are included.

GENERAL CONCLUSIONS

(1) The BAC data collection rate on both Michigan fatalities and surviving drivers in fatal crashes is far less than that needed either to definitively establish the magnitude and nature of alcohol involvement in fatal crashes throughout Michigan or to establish a baseline of data for evaluation of future countermeasure programs or determination of future trends.

*Filkins, L.D. and Minahan, D.J. Capabilities and Requirements for Blood Alcohol Testing of Michigan Traffic Fatalities, Highway Safety Research Institute, December 1969.

(2) The major problem which causes the BAC data collection rate to be low is that blood specimens are not being obtained following the crash.

(3) Superimposed on the blood specimen collection problem is a data collection, integration, and analytical problem for those cases in which a blood specimen is obtained and analyzed.

(4) The previous Filkins-Minahan report documented that there is no centralized, state-run Medical Examiner system in Michigan. Rather there is a body of State law which in effect creates 83 separate "systems" with wide divergences in facilities, personnel, and performance. In and of itself this is counterproductive to achieving high BAC data collection on fatalities. This situation is further compounded by the fact that Medical Examiners (and Coroners) generally have the necessary legal authority and operational tools to collect BAC's but lack the commitment to do so, whereas police lack the authority and tools but generally have the greater commitment.

RECOMMENDATIONS

(1) The entire general issue of whether BAC data on traffic fatalities and surviving drivers of fatal crashes (and possibly surviving drivers of non-fatal crashes) is worthwhile and should be collected should be examined critically by interested, knowledgeable, and effected parties. Consideration should be given by OHSP to constituting an ad hoc group for this purpose. Membership might include top-level representation from the following organizations: Michigan Association of Chiefs of Police; Michigan Bar Association; Michigan Departments of the Attorney General, Public Health, State, and State Police; Michigan Legislature; Michigan Medical Society; Michigan Office of Criminal Justice Programs; Michigan Office of Drug Abuse and Alcoholism; and Prosecuting Attorneys Association of Michigan. County Medical Examiners should also be represented. Members of advocate groups such as Traffic Safety for Michigan and local traffic safety associations, might also be included.

If such an ad hoc group is constituted and endorses the proposition, then formal resolutions should be drafted, officially

approved by the represented organizations, and distributed to the organizations' membership.

(2) Legislation should be drafted and passed which makes mandatory the collection of a blood (or other body) specimen on all traffic fatalities, the transmittal of such specimens to the Director of the MDPH Crime Lab or his designee, the analysis of such specimens for BAC, and the reporting of results to a designated state agency.

This legislative action should be undertaken irrespective of the implementation of Recommendation 1.

(3) Efforts to improve specimen collection and results reporting by police agencies should initially be undertaken by the MSP.

The rationale is that the MSP currently do the best job (although far short of that needed) and they operate in a state-wide line organization. If emphasis within the MSP fails to produce the desired results then it is highly unlikely that separate county, township, and city police agencies can be expected to succeed even if fully mobilized.

(4) Consideration should be given by OHSP to pilot projects in one or more counties having as their goals

- (a) Determination of why a county succeeds or fails in BAC data collection.
- (b) Identification of the legal or operational obstacles which prevent a successful BAC data collection program.
- (c) Determination of means for overcoming these obstacles.
- (d) Implementation of a BAC data collection program having the objective of BAC data on at least 90% of (1) all drivers and (2) pedestrians and cyclists 16 years of age and older who die within six hours of the crash.

(5) Legal issues regarding the use of BAC data, such as the admissibility of BAC data in civil and criminal actions,

should be explored and resolved by competent legal authorities. The recording of BAC results on the UD-10 and the subsequent use of the UD-10, whether for statistical purposes only or for evidentiary purposes as well, should also be clarified.

(6) Legislation should be drafted and passed which creates an Office of State Chief Medical Examiner vested with administrative, budgetary, and operational control of Medical Examiners serving the 83 separate counties.

In the interim there should be created a Medical Examiners Advisory Office within the Michigan Department of Public Health to clarify the responsibilities of local Medical Examiners and to assist them in the performance of their duties. The possibility of joint funding for such an office by OHSP and the Michigan Office of Criminal Justice Programs, Law Enforcement Assistance Administration, should be explored.

(7) The following recommendations from the earlier Filkins-Minahan report are also considered appropriate:

(a) Design the program to take maximum advantage of the broad authority granted the State Director of Public Health in Public Act 22, 1968, Public Health-Alcoholism, and to medical examiners in Public Act 92, 1969, County Medical Examiners.

(b) In defining program objectives and requirements, anticipate eventual public health programs for drug addiction, air pollution, toxics, and other factors which may contribute to the physiological deterioration of driver and pedestrian performance.

(c) Resolve ambiguities and fears which might bar full cooperation and efficient operation by obtaining an Attorney General's opinion that existing laws authorize blood sampling of all accident fatalities as part of the Alcoholism Program.

(d) Establish within the Department of Public Health (or Office of Chief Medical Examiner) a research facility to

analyze data and distribute pertinent findings to all public health and highway safety officials and other potential information users.

(e) Enact a statute requiring that a blood sample be obtained in the case of all violent or accidental deaths and specifying that medical technicians, nurses, licensed morticians, and other indicated persons may draw the sample.

(f) Amend the Public Health laws to allow courts to accept in evidence by deposition or affidavit the findings of a BAC analysis, except when a court deems additional expert testimony is necessary.

(g) Amend the statute prohibiting mutilation and dismemberment of dead bodies to exempt the taking of a blood sample.

(h) Create by law the Office of State Chief Medical Examiner.

(i) Assign responsibility for state-wide program planning, coordination, and supervision to the State Director of Public Health.

(j) Contingent upon the creation of an Office of State Chief Medical Examiner, assign responsibility for operational direction of the program to the State Chief Medical Examiner, or to a Deputy Director of Public Health.

(k) Train and direct all police agencies in the state to request officially qualified persons to take blood samples and deliver them to predetermined laboratories by the most expeditious method available as a routine step during the investigation of any fatal accident.

(l) Supply all police with blood sampling kits for use by persons officially qualified to draw blood samples.

(m) Employ and train medical technicians, nurses, and licensed morticians to supplement the presently qualified medical examiners and pathologists to take police-requested blood samples.

(n) Have each county's chief medical examiner determine, and then inform all concerned, where and by whom the blood samples in that county will be analyzed.

(o) Arrange for all laboratories which perform BAC analyses on blood taken from traffic fatalities to send a copy of the report to the State Department of Public Health.

(p) Use the Michigan State Police computer facilities to process and analyze all BAC reports.

(q) Under the auspices of the governor, and under the supervision of the Director of Public Health, with all state agencies participating, inaugurate a state-wide educational, training, and information disseminating service to provide the public with information about the program and guarantee continuing and efficient performance of all persons involved in its operation.

SPECIFIC FINDINGS

(1) Combined data from the UD-10's and the follow-up cards indicate that:

(a) 195 of 551 driver fatalities (35.4%) were tested for BAC and the results recorded.

(b) 51 of 164 pedestrian fatalities (31.1%) were tested for BAC.

(c) 5 of 17 pedalcyclist fatalities (29.4%) were tested for BAC.

(d) 60 of 746 surviving drivers (8.0%) were tested for BAC.

(2) Data from the UD-10's indicate that:

(a) Of 1516 persons in the file, HBD was checked on 311 (20.5%); HNBD was checked on 799 (52.7%); and neither was checked

(missing data, no estimate of drinking) on 406 (26.8%). HBD was checked on 28% of the 1110 persons for whom a determination was made.

(b) Of 746 live drivers, HBD was checked on 163 (21.8%); HNBD was checked on 528 (70.8%); and neither was checked on 55 (7.4%). HBD was checked on 23.6% of the 691 persons for whom a determination was made.

(c) Of 736 dead persons, HBD was checked on 143 (19.4%); HNBD was checked on 260 (35.3%); and neither was checked on 333 (45.2%). HBD was checked on 35.5% of the 403 persons for whom a determination was made.

(d) There was no determination (missing data) between "alive" and "dead" on 29 persons (1.9% of 1516 persons).

(e) For 551 dead drivers the missing data rate on the "Test" block is 75.5%. By department it is:

Michigan State Police:	65.5%
Sheriff Departments:	80.1%
City Police Departments:	78.7%
Township Police Departments:	77.4%

(f) For 551 dead drivers, the overall missing data rate on the HBD/HNBD blocks is 33.2%. By department it is:

Michigan State Police:	19.6%
Sheriff Departments:	36.8%
City Police Departments:	39.1%
Township Police Departments:	45.2%

(g) For 746 live drivers, the overall missing data rate on the HBD/HNBD blocks is 7.4%. By department it is:

Michigan State Police:	4.2%
Sheriff Departments:	8.7%
City Police Departments:	8.9%
Township Police Departments:	2.2%

(h) No numerical BAC results are recorded on the UD-10 in 45 of the 120 cases (37.5%) in which the UD-10 "Test" block contained an indication that a test had been taken on dead drivers.

(3) The follow-up card data indicate that:

(a) Autopsies were indicated on 194 of the 736 fatalities (26.4%). The same data indicate that BAC chemical test results are available on only 93 (47.9%) of these 194 cases.

(b) A chemical test was made on 199 of the 736 fatalities (27.0%). Of these 199 determinations, 88 (44.2%) were apparently concurrent with an autopsy, 43 (21.6%) were done with no autopsy, and 68 (34.2%) were made in cases in which autopsy data are missing.

(c) The follow-up card system increased the BAC data collection rate on fatalities significantly. For example, some indication of a chemical test having been performed can be deduced from the UD-10 data on 120 of the 551 dead drivers (21.8%). The combined UD-10 and card data increase this to 196 cases (35.6%).

(d) No numerical BAC results are recorded on the follow-up card in 19 cases (11.2%) of 169 cases in which it was indicated that a chemical test had been performed.

(4) The BAC collection rate by county on dead drivers ranges from zero to 100%, the latter holding only for counties with five or fewer driver fatalities. Among counties with ten or more driver fatalities, Berrien leads with 61% followed closely by Kalamazoo, Kent, and Washtenaw; Monroe (0%) and Genesee (5%) have the lowest BAC data collection rates among the larger counties.

Table 1 below shows the driver fatalities by county and the number of recorded BAC's from the combined data for these fatalities expressed as a fraction. The BAC percentage collection rate is also shown.

(5) Combined UD-10 and follow-up card BAC data and UD-10 HBD/HNBD data on 551 dead drivers show:

(a) HBD/HNBD data were missing on 183 cases (33.2%). Of these 32 (17.5%) had zero BAC's, 46 (25.1%) had positive BAC's, and 105 (57.4%) had missing BAC data. Of the 78 cases for whom BAC data were available, 59% had positive BAC's.

(b) HNBD was checked on 237 (43.0%) of the 551 cases. Of these, 37 (15.6%) had zero BAC's, 9 (3.8%) had positive BAC's, and 191 (80.6%) had missing BAC data. Of the 46 cases for whom BAC data were available, 19.6% had positive BAC's.

(c) HBD was checked on 131 (23.8%) of the 551 cases. Of these, 4 (3.1%) had zero BAC's, 67 (51.1%) had positive BAC's, and 60 (45.8%) had missing BAC data. Of the 71 cases for whom BAC data were available, 94.4% had positive BAC's.

(6) Combined UD-10 and follow-up card BAC data show that 195 (35.4%) of 551 dead drivers were tested for BAC and the numerical results subsequently recorded.

(a) Of these 195, 73 (37.4%) had zero BAC's, and 122 (62.6%) had positive BAC's.

(b) 106 (54.4%) of the 195 had 0.07 or higher BAC.

(c) 102 (52.3%) of the 195 had 0.10 or higher BAC.

(d) 67 (34.4%) of the 195 had 0.15 or higher BAC.

(e) 10 (5.1%) of the 195 had 0.25 or higher BAC.

(f) The mean BAC of 195 tested dead drivers is 0.099.

(g) The mean BAC of 122 positive BAC dead drivers is 0.158.

(7) Combined UD-10 and follow-up card BAC data and UD-10 HBD/HNBD data on 746 surviving drivers show:

(a) HBD/HNBD data were missing on 55 (7.4%) cases. Of these, 4 (7.3%) had zero BAC's, 3 (5.4%) had positive BAC's, and 48 (87.3%) had missing BAC data.

(b) HNBD was checked on 528 (70.8%) cases. Of these, 12 (2.3%) had zero BAC's, 1 (0.2%) had a positive BAC, and 515 (97.5%) had missing BAC data.

(c) HBD was checked on 163 (21.8%) of the cases. Of these, none had zero BAC's, 40 (24.5%) had positive BAC's, and 123 (75.5%) had missing BAC data.

(8) Combined UD-10 and follow-up card data show that 60 (8.0%) of 746 surviving drivers were tested for BAC.

(a) Of these 60, 16 (26.7%) had zero BAC's and 44 (73.3%) had positive BAC's.

(b) 38 (63.3%) of the 60 had 0.07 or higher BAC.

(c) 35 (58.3%) of the 60 had 0.10 or higher BAC.

(d) 21 (35.0%) of the 60 had 0.15 or higher BAC.

(e) None had 0.25 or higher BAC.

(f) The mean BAC of 60 tested surviving drivers is 0.104.

(g) The mean BAC of 44 positive BAC surviving drivers is 0.142.

(9) The data do not permit a determination of time trends during the six-month study period. For example, the percentages of dead drivers tested per UD-10 data for January-June are 20.4; 27.1; 35.9; 15.9; 10.7; and 7.1. The clear drop-off during the last three months undoubtedly reflects a data processing change by MSP rather than a change in the real world phenomenon.

This is further shown by the fact that use of the follow-up card data increased the number of available BAC numerical results from 111 cases to 157 cases in the January-March period, an increase of 41%. However, the apparent increase in the April-June period using the follow-up card data was from 30 cases to 157 cases. This is a misleading result and shows only that BAC results were not concurrently recorded on the UD-10's.

APPENDIX A

(From MSP)

FATAL ACCIDENT SUPPLEMENT

January - June, 1972

Column

2-6 Fatal accident report numbers
7-39 Fatal accident driver names
40 Position: (1) Driver (2) Pedestrian (3) Pedalcyclist
43-48 Accident report number
51 Department Investigating: (1) State Police
(2) Sheriff
(3) City Police
(4) Township Police
54-55 *County number per attached list
58 Status: (1) Alive (2) Dead
61 Had Been Drinking per UD-10
63 Had Not Been Drinking per UD-10
65-66 Test: (X) Test Taken (BL) Blood Test per UD-10
68-69 Chemical test results numeric per UD-10
72 Autopsy: (Y) Yes (N) No (Blank) Not indicated or
Detroit per card
74 Chemical Test: (Y) Yes (N) No (Blank) Not indicated
or Detroit
per card
77 Chemical test results per card

*See text, page 9.

APPENDIX B
 HSRI VARIABLES IN MICHIGAN FATAL CRASH FILE
 (January-June 1972)

<u>HSRI Variable Number</u>	<u>HSRI Name</u>	<u>Description</u>
1		Month of Crash 1 = January 2 = February 3 = March 4 = April 5 = May 6 = June
2		Case Number within Month
4		Accident Report Number
11		Chemical Test Results per U.D. 10
14		Chemical Test Results per Post Card
15	PØSTN	Classification of Subject 1. Blank 2. Driver 3. Pedestrian 4. Pedalcyclist
16	DEPDINVE	Department Investigating 1. Blank 2. State Police 3. Sheriff 4. City Police 5. Township 8. Originally Coded as a 7 on Data from M.S.P.
17	CTYP1	*County Code (attached county list plus 1)
18	DEADALIVE	Status of Subject 1. Alive 2. Dead 9. Missing Data

*See text, page 9.

<u>Variable Number</u>	<u>Name</u>	<u>Description</u>
19	HBDUD10	Had Been Drinking per UD-10 1. Not Indicated (blank on original data) 2. Yes (x on original data)
20	HNBDUD10	Had Not Been Drinking per UD-10 1. Not Indicated (blank on original data) 2. Yes (x on original data)
21	TSTTAKUD	Test Taken per UD-10 1. Code unknown on original data 2. Test Not taken (blank on original data) 3. Test Taken (x on original data) 4. Blood Test (BL on original data) Other codes on original data 5. "A" 6. "N" 7. "C" 8. "U" 9. "Y"
22	AUTPCARD	Autopsy Taken per Post Card 1. Not indicated on Detroit (blank on original data) 2. "X" on original data 3. Yes (Y on original data) 4. No (N on original data) 5. "A" on original data
23	CTSTCARD	Chemical Test Taken per Post Card 1. Not indicated on Detroit (blank on original data) 2. "X" on original data 3. Yes (Y on original data) 4. No
27	DRINK	Drinking Classification per UD-10 1. Not indicated on UD-10 2. Had not been drinking 5. Had been drinking

<u>Variable Number</u>	<u>Name</u>	<u>Description</u>																										
30	ALL TST3	Chemical test results combined from both the UD-10 and the post card data.																										
31	G BAC 31	Chemical tests results from both the UD-10 and the post card data grouped as follows:																										
		<table><thead><tr><th><u>CODE</u></th><th><u>BAC</u></th></tr></thead><tbody><tr><td>1</td><td>00</td></tr><tr><td>2</td><td>01-06</td></tr><tr><td>3</td><td>07-09</td></tr><tr><td>4</td><td>10-14</td></tr><tr><td>5</td><td>15-19</td></tr><tr><td>6</td><td>20-25</td></tr><tr><td>7</td><td>26-30</td></tr><tr><td>8</td><td>31-35</td></tr><tr><td>9</td><td>36-40</td></tr><tr><td>10</td><td>41-45</td></tr><tr><td>11</td><td>46-50</td></tr><tr><td>12</td><td>Numerical results not available.</td></tr></tbody></table>	<u>CODE</u>	<u>BAC</u>	1	00	2	01-06	3	07-09	4	10-14	5	15-19	6	20-25	7	26-30	8	31-35	9	36-40	10	41-45	11	46-50	12	Numerical results not available.
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