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THE EVALUATION OF EMERGENCY MEDICAL SERVICES IN OAKLAND COUNTY: MOTOR VEHICLE TRAUMA

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December 1981

Prepared in cooperation with:

Michigan Office of Highway Safety Planning

and

U.S. Department of Transportation
National Highway Traffic Safety Administration

PROJECT #MEM-80-008A

COORDINATED BY THE REVIEW AND AUDIT COMMITTEE
OF THE OAKLAND COUNTY COUNCIL FOR EMERGENCY MEDICAL SERVICES
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ACKNOWLEDGMENTS

I would like to extend appreciation to the many people who have assisted in the successful completion of this project. This includes the members of the Oakland County Council for Emergency Medical Services (OAKEMS), Joseph L. Schirle, Jr., M.D., Chairman. The Council, comprised of health providers, community leaders, consumers, and educators, promotes and regulates the implementation of the E.M.S. system.

The OAKEMS Review and Audit Committee provided the administrative and medical direction to the study. Dr. B. Ken Gray, as former Chairman of the Review and Audit Committee, greatly contributed to the development and implementation of the project. Gary T. Canfield, M.P.H., past-Director of Oakland County Emergency Medical Services/ Disaster Control and past-Project Director, worked on the original development and the ultimate acceptance of the study. Mr. Edward Barter, Chairman, and Dr. Solomon Hochbaum, Vice-Chairman of the Review and Audit Committee, constructively reviewed the on-going analysis and final manuscript. Their comments and suggestions were extremely helpful.

Ms. Phyllis Gimotty of the University of Michigan Highway Safety Research Institute, provided the needed expertise and insight into the more complicated aspects of the data analysis. Sgt. Stephen Smith of the Michigan State police took the time to supply us with the hourly weather wire information.

Special thanks also to the many Emergency Department personnel, hospital abstractors, and the participating Oakland County Basic and Advanced Life Support providers for their cooperation.

Support for the project was provided by Daniel T. Murphy, County Executive, the Oakland County Board of Commissioners, Richard Wilcox, Chairman, and the Public Services Committee, James Lanni, Chairman.

Finally, without the cooperation of the staff of the Oakland County Division of Emergency Medical Services and Disaster Control, Mr. Paul Phelps, Director, and the excellent clerical assistance of Mrs. Barbara Dustman and Ms. Marilyn Lawrence, this project could not have been completed.

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December 1981

ABSTRACT

An evaluation of the Oakland County Emergency Medical Services was conducted March 1 through June 30, 1981. Motor vehicle trauma victims who were treated by Basic or Advanced Life Support providers and transported to one of the nine participating Oakland County hospitals were the subjects selected for the evaluation. The goals of the project were 1) to generate base line data on such pre-hospital factors as E.M.S. response times, type of responder, and level of communications, and 2) to evaluate the effectiveness of Basic and Advanced Life Support services on patient outcome.

A total of 1,335 patients were responded to by Oakland County E.M.S., within the 4 month study period. The results indicated that the average response time for all E.M.T. Units was 5.6 minutes. Significant differences between B.L.S. and A.L.S. Units were found for three time variables - response time to the scene of the accident, the amount of time the transporting unit was on the scene, and the total time to hospital care. The B.L.S. times were significantly less for each time variable.

In terms of short-term outcome, injured patients treated by paramedics had statistically significant decreases in the severity of their trauma as indicated by a change in trauma score during pre-hospital intervention. There was an insufficient number of injured patients treated by Basic EMT's to test for statistically significant differences. Further multivariate analysis indicated that time factors alone may have had more of an effect on short-term patient outcome when taking into account the severity of the patient's injury than the training level of the responder alone or the interactive effects of time and responder. While the statistical strength of these latter relationships were relatively weak, there was a trend toward a worsening trauma score as response time and time spent on the scene increased. The overall mortality rate of the sample was 2%. Seven cases were dead when the E.M.S. unit arrived on the scene of the accident (.5% of the total sample). Eighteen patients treated by E.M.S. later expired. Of these 18, 83% (15) expired prior to admission into a hospital, and 17% (3) expired after admission.

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I. EXECUTIVE SUMMARY

The Oakland County Emergency Medical Services Evaluation Project arose out of the need for up-to-date evaluative information on the state of local pre-hospital care. Motor vehicle trauma victims who were treated by Basic or Advanced Life Support providers and transported to a participating Oakland County hospital were the subjects selected for the evaluation. The goals of the project were 1) to generate base-line data on such pre-hospital factors as E.M.S. response times, type of responder, and level of communications, and 2) to evaluate the effectiveness of Basic vs. Advanced Life Support Services on patient outcome.

Thirteen municipal basic life support (B.L.S.) and eleven advanced life support (A.L.S.) groups participated in the project. Nine Oakland County hospitals collected medical data on the patients.

METHODS

All pre-hospital information was obtained from the standardized Oakland County E.M.S. Reporting Forms which were completed for all patients. Hospital data was obtained from medical records. All information was coded and names removed so that patient confidentiality was strictly maintained.

The patient severity of injury was measured by means of the Trauma Score (Sacco, Champion, and Carnazzo, 1981). This index ranges from 1 to 16, with 1 being severe injuries and 16 being minor injuries. (See page 6 for a more detailed description of the Trauma Score). The score was calculated once before pre-hospital intervention by the EMT's and a second time by Emergency Department personnel before hospital treatment. It was, therefore, possible to analyze the effects of pre-hospital care on patient outcome while controlling for the severity of the injury.

Patient outcome was measured at three points in time during medical intervention: 1) after pre-hospital treatment, 2) after Emergency Department treatment, and 3) at the time of patient discharge.

RESULTS

Response Times

The average response time for all E.M.T. Units was 5.6 minutes. B.L.S. Units generally arrived at the scene one minute faster than A.L.S. Units

B.L.S. Units were on the scene of an accident for an average of 14 minutes, whereas A.L.S. Units were there for 19 minutes. Generally, the more severe the patient's injury, the longer the E.M.S. Unit was on the scene.

The mean (average) travel time to the hospital was 11 minutes for all E.M.S. Units. There was no statistically significant difference in the travel time for Basic and Advanced Units.

More than half (62%) of the accident victims arrived at the participating hospitals between Noon and 6:00 p.m. Fifty percent of the most severely injured patients (Trauma Score $\leq$ 10) arrived between 3:00 p.m. and Midnight.

The average total time to hospital care was 35 minutes for all patients. Patients treated by B.L.S. providers were, on the average, at the hospital 29 minutes from dispatch. Those treated by A.L.S. providers were at the hospital in 36 minutes from dispatch.

Patient Characteristics

A total of 1,335 patients were responded to within the 4-month study period. The average patient was male and 31 years old. Eighteen-year-olds were the most frequently injured age group. Ninety percent of the patients did not wear seat belts. Eighty-three percent of the patients were injured while in an automobile, 9% were on motorcycles, 6% were pedestrians, and 2% bicyclists.

Treatment Characteristics

Nine percent of the total sample were reported to have a first responder on the scene of the accident; of these, 38% were police officers and 15% citizens. Fifty percent of the CPR's and 23% of the extrications initiated by a first responder were by citizens. Except for first responder CPR, the E.M.S. Reporting Form does not have a specific space for first responder intervention. Consequently, the frequencies reported may be less than what actually occurred.

Advanced Life Support Units responded to 64% of the cases. Their most frequent treatments were splinting (33%) and bandaging (23%). The severely injured patients (Trauma Score $\leq$ 13) most frequently received medications, IV's, and EKG's.

Basic Life Support Units responded to 22% of the cases. Their most frequent treatments were splinting (30%) and bandaging (21%). One percent of those patients received oxygen and less than 1% received CPR.

The high frequency of splinting and bandaging was expected because most of the patients in the study had only minor injuries. Seventy-nine percent of the patients were given a trauma score of 16 by an E.M.T. The average E.M.S. (pre-hospital) trauma score was 15.3. The average trauma score <u>after</u> pre-hospital treatment was 15.4. Forty-seven percent of the patients had no change in trauma score during pre-hospital treatment.

Communications

The HERN (Hospital Emergency Radio Network) system, was used in 21% of the total cases. A.L.S. Units utilized the UHF radio most frequently for hospital communications (83%). With the most severely injured patients (trauma score 10), UHF radio communications were documented in 77% of the cases. Communication problems with HERN, the telephone, or UHF radio were reported in 10% (69) of the cases.

Patient Injury and Outcome

The most frequently injured area of the body was the head and neck (58%). Fifty-seven percent of the most severely injured patients (trauma score $\leq$ 10) received head and neck injuries, 21% suffered thoracic injuries, and 21% abdominal injuries.

Seventy-four percent of the patients were discharged from the Emergency Department; 21% were admitted into the hospital.

The overall mortality rate of the sample was 2% (25). Seven cases were dead when the E.M.S. Unit arrived on the scene of the accident (.5% of the total sample). Eighteen patients treated by E.M.S. later expired. Of these 18, 83% (15) expired prior to admission into a hospital unit, and 17% (3) expired after admission.

The Effect of Basic vs. Advanced Life Support Service On Patient Outcome

Patients treated by A.L.S. providers with pre-hospital trauma scores less than 16 had a statistically significant improvement in their trauma scores. There was an insufficient number of injured patients treated by Basic EMT's to test for statistically significant differences.

Further multivariate analysis indicated that time factors alone may have had more of an effect on short-term patient outcome when taking into account the severity of the patient's injury than the training level of the EMT alone or the interactive effects of time and level of responder. While the statistical strength of these latter relationships were relatively weak, there was a trend toward a worsening trauma score as response time and time spent on the scene of the accident increased.

Finally, two facets of the data must be taken into account when interpreting the results. First, because the patient sample had so few critically injured patients, the data may not reflect the effect of advanced treatments (i.e., IV's, medications) on the change in the patients' trauma score. Second, the validity and inter-rater reliability of the Trauma Severity Score has not been firmly established for motor vehicle trauma. Nonetheless, the great amount of information produced by this study should not only assist the health care providers and policymakers in assessing the pre-hospital care of motor vehicle trauma victims in Oakland County, but also provide a basis for further evaluation.

II. Introduction

The Oakland County Emergency Medical Services Evaluation Project arose out of the need for up-to-date evaluative information on the state of local pre-hospital care. Motor vehicle trauma victims who were treated by Basic or Advanced Life Support providers and transported to one of the nine participating Oakland County hospitals were the subjects selected for the evaluation. The goals of the project were 1) to generate base line data on such pre-hospital factors as E.M.S. response times, type of responder, and level of communications, and 2) to evaluate the effectiveness of Basic VS. Advanced Life Support Services on patient outcome.

Thirteen municipal basic life support (B.L.S.) and eleven advanced life support (A.L.S.) groups participated in the project. The B.L.S. groups included Addison Fire Department, Avon Township Fire Department, Berkley Fire Department, Brandon Fire Department, Farmington Hills Fire Department, Groveland Fire Department, Hazel Park Fire Department, Holly Volunteer Ambulance, Independence Fire Department, Madison Heights Fire Department, Oak Park Public Safety, South Lyon Volunteer Ambulance, and Wixom Fire Department. The eleven A.L.S. groups participating in the study were Am-Care, Inc., Birmingham Fire Department, Bloomfield Township Fire Department, Fleet Ambulance, Novi Ambulance, Paramed, Inc., Riverside Ambulance, Southfield Fire Department, Suburban Ambulance Service, Waterford Township Fire Department, and West Bloomfield Fire Department.

Nine Oakland County hospitals participated in this project: William Beaumont/Royal Oak, William Beaumont/Troy, Botsford General Hospital, Crittenton Hospital, Martin Place Hospital, Pontiac General Hospital, Pontiac Osteopathic Hospital, Providence Hospital, and St. Joseph Mercy Hospital, Pontiac.

III. Subjects

The subjects selected for this project were motor vehicle trauma victims. A motor vehicle was defined as an automobile, truck, snowmobile, or motorcycle. Bicyclists and pedestrians involved in an accident with a motor vehicle were also included. The criteria for a victim to be included in the study were: 1) involvement in a motor vehicle accident between March 1 and June 30, 1981, and 2) treatment and/or transportation to an Oakland County hospital by a participating Basic and/or Advanced Life Support Unit.

IV. Methods

All pre-hospital information was obtained from the standardized Oakland County E.M.S. Reporting Forms (Appendix I) which were completed for all patients. Hospital information was coded and names removed so that patient confidentiality was strictly maintained.

The patient severity of injury was measured by means of the Trauma Severity Score[1] (Appendix II). This is a scale ranging from 1 to 16, with 1 being the most severely impaired and 16 the least impaired. For purposes of discussion, patients who were scored 1 through 10 were categorized as most severely injured, 11 through 13 as severely injured, 14 through 15 as moderately injured, and 16 as least injured.

The Trauma Severity Score is based upon neurologic and cardiopulmonary parameters which were measured once by the EMT's before intervention, and a second time by the Emergency Department staff before the hospital's initiation of treatment. Ideally, then, each patient's severity of injury was measured twice. It was, therefore, possible to analyze the effects of pre-hospital care on patient outcome while controlling for the severity of the injury.

Patient outcome was measured at three points in time during medical intervention. Three measurements of patient outcome (the dependent variable) were required in order to decrease the confounding effects of time and type of medical intervention.

[1] For a more complete description of the Trauma Score, see Sacco, W.J., Champion, H.R. and Carnazzo, A.J. Trauma Score. Current Concepts in Trauma Care pp 9-11; and Champion, H.R., Sacco, W.J., Carnazzo, A.J., Copes, W., Fouty, W.J. Trauma Score. Critical Care Medicine 9:672-676, 1981.

The patient outcome measures are as follows:

1. Short-term Patient Outcome - this variable is the change in trauma score during pre-hospital intervention. It is calculated as the Emergency Department trauma score minus the E.M.T. trauma score. The score ranges from -5 (worsening condition) to +5 (improving condition). Zero indicates no change in trauma level.

2. Emergency Department Patient Outcome - this is a categorical variable measured after the patient was treated in the Emergency Department. The patients were classified into one of four categories: 1) restored to normal activity - the patient was discharged and expected to maintain normal living functions; 2) temporary disability - the patient was discharged with an expected loss of work or modification in daily activities, or was admitted into the hospital; 3) permanently disabled - the patient had a loss of organ, limb, function, or ability; 4) death.

3. In-Patient Outcome - this variable pertains to only those patients admitted into the hospital and was determined at their discharge. It is composed of three different measurements: 1) the number of days in a critical care unit, and the total number of days in the hospital; 2) the mortality rate; and 3) final diagnosis.

The effectiveness of Basic vs. Advanced Life Support services upon patient outcome can be sensitively measured by the Short-Term Outcome variable (the relative change in trauma score). The Emergency Department Outcome variable provides a description of patient status after pre-hospital and Emergency Department treatment and reflects the quality of Emergency Medical Services in general. Finally, the In-Patient Outcome variable indicates the duration of hospital care and the ultimate mortality rate of motor vehicle trauma victims who were provided with both pre-hospital and in-patient care.

The results section has been divided into seven categories: A) E.M.S. Response Characteristics, B) Patient Characteristics, C) Treatment Characteristics, D) Communications, E) Patient Injury and Outcome, F) Day/Weather Factors, and G) Analysis of Basic VS. Advanced Life Support Services on Patient Outcome. The salient features of each variable or set of variables are included in each section; however, for the best comprehension of the data, the reader is encouraged to review each table along with the description.

Results which are statistically significant are indicated so by the probability level ($p \leq .01$ or $p \leq .05$).[1] Descriptive statistics (i.e., mean, median, mode, standard error) are presented for all variables. Contingency tables are presented with the chi square test of independence and tests of association (Cramer's, V., Contingency Coefficient. and Gamma) only if no more than 20% of the cells in the larger tables have expected frequencies of less than 5.[2] However, information in the tables without a sufficient amount of data for statistical testing can still be meaningful for descriptive purposes.

Finally, T - tests, analysis of covariance, and multiple regression techniques have been used to analyze the impact of Basic and Advanced Life Support Services on patient outcome.[3]

1 Statistically significant relationships are those which have the probability of occurring by chance 5 percent of the time or less.

2 The chi square test of independence is a test of statistical significance. It determines whether a systematic relationship exists between two variables. A measurement of association indicates how strongly two variables are related to each other. Therefore, a relationship between two variables may be statistically significant without being strongly related.

3 These statistics are used to test the difference between the means of two or more groups. The analysis of covariance and regression procedures are used to control for the variation in the dependent variable (patient outcome) due to the covariates (i.e., patient trauma score). The statistical package used for the analysis was SPSS (Nie, Norman H., Hull, C.H., Jenkins, J.G., Steinbrenner, K., Bent, D.H., 1975.

V. Results

A. E.M.S. RESPONSE CHARACTERISTICS

1. E.M.S. response time to an accident was defined as the time the E.M.S. unit arrived at the scene minus dispatch time. On the average, Basic and Advanced Life Support Units responded to a motor vehicle accident in 5.6 minutes (N=1099). Fifty-six percent (620) of all cases were responded to within 5 minutes from dispatch (Table 1). In cases where E.M.S. transporting units served as second responders to an accident, arrival was, on the average, within 7 minutes (Table 2).

The average response time of Advanced Life Support Units was 1 minute longer than that of Basic Life Support Units - 5.9 minutes for A.L.S. and 4.9 minutes for B.L.S. (T Value = -3.23 df= 876, $p \leq .01$).

Fourteen percent (152) of the total number of accidents had two E.M.S. units arrive on the scene and eighty-three percent (914) had one E.M.S. unit (Table 3). In 58% of the accidents where there were two E.M.S. units, response time was less than 4 minutes (Table 4). When there was only one E.M.S. unit responding to the scene, 64% of the calls were responded to between 4 and 10 minutes ($p \leq .01$).

Forty-seven percent (142) of the municipal and volunteer units were at the scene within 3 minutes, whereas twenty-eight percent (267) of the private ambulance calls arrived within 3 minutes from dispatch (Table 5).

2. Time On Scene

The E.M.S. transporting unit spent an average of 18.5 minutes at the scene of the accident (N=1042). Sixty-four percent (662) of all cases had units on the scene for one through nineteen minutes. Approximately thirty-three percent (339) of the transporting units were on the scene twenty through forty-four minutes (Table 6). Basic Life Support Units were on the scene for an average of 14 minutes, whereas Advanced Life Support Units were there 5 minutes longer, or 19.3 minutes (T Value =-5.72, df = 840, $p \leq .01$).

Table 7 shows that the more severe the patient's injury, the longer the E.M.S. Unit remained on the scene. Thirty-nine percent (5) of those patients whose severity of injury fell in the 0 to 10 range had units on the

scene for over 30 minutes. Only 13% (73) of the patients receiving a trauma score of 16 were on the scene for over 30 minutes.

Table 8 indicates a statistically significant relationship between the time the E.M.S. Unit spent on the scene and patient priority level ($p \leq .01$). According to the Oakland County Emergency Medical Services Paramedic Standard Operating Procedures (1981), priority ratings are defined

Priority 1: Critically ill or injured person who needs immediate attention - delay in treatment will threaten life or function.

Priority 2: Less serious condition - no obvious threat to life or function. Temporary delay will not endanger patient's condition.

Priority 3: Non-urgent condition which will require medical attention, but not immediate treatment.

Figure 1 illustrates the relationship between the length of time the E.M.S. unit was on the scene and the severity of patient injury.

3. Time To Hospital

The average E.M.S. travel time to the hospital was eleven minutes (N=1045). Forty-nine percent (510) of the cases took under ten minutes to travel from the scene of the accident to the hospital (Table 9). The mean travel time to the hospital for the B.L.S. group was 10.5 minutes and for the A.L.S. group, 11.2 minutes. This difference, however, was not statistically significant.

There was also no statistically significant relationship between travel time to hospital and the patient's priority rating, although 30% (15) of the priority one's took 6 through 9 minutes to travel to the hospital, 23% (49) of the priority two's took 0 through 5 minutes, and 25% (117) of the priority three's took 6 through 9 minutes (Table 10).

4. Hospital Arrival

The highest percentage of vehicular accident victims arrived at the participating hospitals between the six hour period of Noon to 6:00 p.m. - 385 patients or 33% of the total sample (Table 11).

Fifty percent (8) of the most severely injured patients (Trauma Score $\leq$10) arrived at participating hospitals between the hours of 3:00 p.m. and Midnight (Table 12).

5. Receiving Hospitals

William Beaumont/Royal Oak Hospital received most of the patients in this sample - 24% or 311 cases. St. Joseph Mercy/Pontiac and Botsford General Hospital were next highest, with 18% and 14% of the cases respectively (Table 13).

Twenty-five percent (4) of the most severely injured group (Trauma Score $\leq$ 10) were transported to Pontiac Osteopathic Hospital, 19% (3) to Pontiac General Hospital, and 19% (3) to Crittenton Hospital (Table 14).

Table 15 shows the percentage of pre-hospital trauma scores received for patients transported to the participating hospitals. Three of the hospitals had compliance rates of less than 50% (Providence Hospital -38%, St. Joseph Mercy Hospital - 39%, and Pontiac Osteopathic Hospital -49%). The overall compliance rate was 62%. As indicated in Table 14, Providence and St. Joseph Mercy Hospitals appear to be lacking cases in the 11 through 15 trauma range. Unlike the other hospitals, Providence and St. Joseph's do not have a gradual increment of cases from the most severely injured (0-10) to the least injured (16). This amount of missing data for these hospitals must be kept in mind when interpreting certain statistics which include the patient's pre-hospital trauma score.

6. Priority Rating

Of the cases given a priority rating by an E.M.T. (851), 63% (538) were categorized as Priority 3 or non-urgent, 31% (260) as Priority 2 or non-life-threatening, and 6% (53) as severe-life-threatening (Table 16). Only 2% (16) of the identified cases changed level of priority during E.M.S. intervention (Table 17).

In examining the number of Priority 1 and 2 patients transported to specific hospitals, however, a large number of missing cases were identified. For example, William Beaumont/Royal Oak Hospital treated the largest percentage of patients (24%) but only had priority ratings for 13% of the patients in the sample. Consequently, the proportions presented could be misleading (Table 18).

7. Total Time To Hospital Care

Total time to hospital care was defined as the time the E.M.S. unit arrived at the hospital minus dispatch time. The average time to hospital care was 34.8 minutes. Forty-eight percent of the patients arrived at the hospital within 30 minutes of dispatch (Table 19).

B. PATIENT CHARACTERISTICS

1. Patient Age and Patient Sex

The average age of the accident victim was 31 years. The age group with the highest percentage of accident victims was the 16 through 25 year-olds (37% or 483 cases) (Table 20). Most of the accident victims were male - 56% of the sample or 750 cases (Table 21). Only the 56 through 65 year-old group and the over-76 group had more females than males (Table 22). There was no statistically significant difference in the age of the patients treated by advanced and basic units. The average age of the patients treated by a B.L.S. service was 33, and 31 by an A.L.S. service.

2. Use of Seat Belts

Ninety percent of the victims did not wear seat belts (N=864) (Table 23). The age groups with the highest percentage of seat belt use were the 0 through 5-year-old group (16%) and the 66 through 75 year-old group (17%) (Table 24). Approximately 10% of both males and females wore seat belts (Table 25). Eighty-six percent of those patients wearing seat belts received minor injuries (Trauma Score = 16), compared to 79% of those who did not wear seat belts (Table 26). Four percent of the patients wearing seat belts and 9% not wearing seat belts were severely injured (Trauma Score $\leq$ 13).

3. Type of Vehicular Accident

Eighty-three percent (1063) of the patients were injured while in an automobile. Nine percent (113) were on motorcycles, six percent (73) were pedestrians, and two percent (22) were riding bicycles (Table 27). For the correlational analysis, the one snowmobile victim was included in the motorcycle group.

Fifty-nine percent of the bicycle victims and 47% of the pedestrian victims were between the ages of 6 and 15 years. Seven percent of pedestrian victims were over the age of 66 (Table 28).

Males were the predominant victims in truck, motorcycle, and bicycle accidents ($p \leq .01$) (Table 29).

C. TREATMENT CHARACTERISTICS

1. Type of First Responder

Of the total number of first responders reported (124), 38% were police officers and 15% citizens (Table 30).

2. Type of First Responder Treatment

The most frequent treatments given by first responders were bandaging (16%), splinting (15%), and extrication (13%) (Table 31). Fifty percent of the CPRs and 23% of the extrications were done by citizens (Table 32).

3. Type of E.M.S. Responder

Sixty-four percent (789) of the cases were responded to by an Advanced Life Support provider. Twenty-two percent (266) were treated by a Basic Life Support provider, and fourteen percent (174) received treatment from Basic and Advanced Life Support providers (Table 33).

There was no statistically significant difference in the severity of injury between the two groups of patients treated by A.L.S. and B.L.S. units. The average trauma score for the patients treated by the B.L.S. group was 15.5 and 15.3 for the A.L.S. group.

Basics responded to the smallest percentage of severely injured patients (1%) and Basic and Advanced units treated the largest percentage (7%) (Table 34).

4. Basic Life Support Treatment

Thirty percent (85) of the Basic Life Support treatment were splinting and 21% bandaging. Less than 1% received CPR and 1% received oxygen (Table 35).

The most severely injured patient group (Trauma Score ≤ 10) received oxygen, CPR, hemorrhage control, and "other" treatments from the Basic

Life Support providers (Table 36). All of the patients given oxygen by B.L.S. providers were treated on the scene for over 15 minutes. Fifty-five percent of the patients who were given splints by Basics were on the scene for less than 15 minutes (Table 37).

5. Advanced Life Support Treatment

Thirty-one percent (257) of the Advanced Life Support treatments were splinting and 22% were bandaging.

The "other" category, which was 22% of the treatments given, included more general procedures, such as IPS, vitals, and extrication (Table 38).

Forty-three percent of the most severely injured patient group (Trauma Score $\leq$ 10) received EKG's and 29% received medications (Table 39). Five percent of the patients who received a trauma score of 16 were given IV's.

Eighty-eight percent (64) of the patients given IV's by an A.L.S. provider were treated on the scene over 20 minutes. Thirty-eight percent (16) of the patients receiving EKG's were on the scene for over 30 minutes (Table 40).

D. COMMUNICATIONS

1. HERN (Hospital Emergency Radio Network)

HERN is a VHF radio communications system for Basic Life Support providers or a back-up for the UHF system. HERN was documented in 21% (225) of the cases. The hospitals most frequently contacted by HERN were Pontiac General (23%), Crittenton (23%), and St. Joseph Mercy Hospital (22%) (Tables 41 and 42).

Only 9% of the most severely injured cases (Trauma Score $\leq$ 10) had HERN contact (Table 43).

Basic Life Support providers used HERN in 20% of their calls, A.L.S. providers used it in 22%, and when both a B.L.S. and A.L.S. provider were on the scene, HERN was used in 21% of the cases (Table 44).

The HERN system was used in 8% of the priority 1 cases and 29% of the priority 3 cases ($p \leq .01$) (Table 45).

2. UHF Radio & Telephone Usage Via The Oakland County Communications Coordination Center ("O"COM)

Advanced Life Support providers utilize both the UHF radio communications system and the telephone to communicate with the cooperating hospitals. UHF radio and telephone communications were documented in 517 cases. The UHF radio was used most frequently (91%), followed by the use of the telephone (9%) (Table 46). The hospitals contacted most frequently were Pontiac Osteopathic (47%), Providence (13%), and Pontiac General (13%) (Table 47).

Table 48 indicates the amount of communications data not documented on the E.M.S. run forms. If there was no notation whatsoever of communications use on the run forms, the item was considered missing. Seventeen percent of the radio, 18% of the telephone, and 21% of HERN communications were unknown because of lack of documentation.

Communication problems with HERN, the telephone, or UHF radio were reported in 10% (69) of the cases (Table 49).

With the most severely injured group (Trauma Score $\leq$ 10), radio communications were documented in 77% of the cases (Table 50). The telephone was used with 4% of the least injured group (Trauma Score = 16) (Table 51).

Both Pontiac General Hospital and Pontiac Osteopathic Hospital received 33% of the communications on the most severely injured patient group (Trauma Score $\leq$ 10) (Table 52).

B.L.S. providers utilized the telephone in 75% of their communications; A.L.S. providers used the UHF radio in 93% of their communications (Table 53).

The relationship between patient priority level and hospital communications neared statistical significance ($p \leq .06$). The higher the patient priority level (the more critical the injury), the more frequent UHF radio was used, compared with the telephone (Table 54).

Twenty percent of the A.L.S. patients who received oxygen also received EKG transmissions. Nineteen percent of the patients receiving IV's and 43% of those receiving medications were also given EKG's (Table 55).

Radio transmissions were made on 53% of the Basic's patients receiving splints and on 75% receiving bandaging (Table 56). All of the patients receiving hemorrhage control from a B.L.S. provider had UHF radio contact with a hospital.

E. PATIENT INJURY AND OUTCOME

1. Body Area Injured

The most frequently injured body area was the head and neck (58% or 687 cases). The lower limb and upper limb received 14% and 10% of the injuries respectively. Injury to the abdominal area was reported in 3% of the cases (Table 57).

Fifty-seven percent of the most severely injured group (Trauma Score ≤ 10) received injuries to the head and neck areas, 21% suffered thoracic injuries, and 21% abdominal injuries (Table 58).

Sixty-three percent of the head and neck injuries were treated by A.L.S. providers and 21% by B.L.S. providers. Thirty percent of the spine and pelvic injuries were treated by B.L.S. providers. There was no statistically significant relationship between the level of responder and the anatomical injury he/she treated (Table 59).

For those cases in which communications were documented (414), ninety-five percent of the patients receiving spine and pelvic injuries, and all of the patients receiving abdominal injuries, had UHF radio contact with the hospital (Table 60).

Twenty-eight percent of the patients between the ages of 76 and 98 years received thoracic injuries. Ninety-six percent of the patients under five years of age received head and neck injuries (Table 61).

Nineteen percent of the patients receiving spine and pelvic injuries, and 13% of the patients receiving thoracic injuries were wearing seat belts at the time of the accident (Table 62). The relationship between area of body injury and use of seat belt was not statistically significant.

Ninety percent of the patients receiving head and neck injuries were in an auto accident. Nineteen percent of those patients receiving abdominal injuries were pedestrians hit by a moving vehicle. Twenty-three

percent of the lower limb injuries were received by patients riding motorcycles (Table 63).

2. Trauma Severity Score

Pre-hospital trauma scores were completed for 809 patients. The average trauma level before E.M.S. intervention was 15.3 (0 being most severe and 16 least severe). Seventy-nine percent of the sample were given a trauma level of 16 (Table 64). Seventy-two percent of all cases were scored by A.L.S. providers (Table 65).

The Emergency Department trauma scores were completed for 1,115 cases. The average trauma score after pre-hospital treatment was 15.4 (Table 66). Eighty-four percent (84%) of these cases were scored by Emergency Department nurses (Table 67).

A value was determined for the change occurring in trauma score (Emergency Department's trauma score minus the E.M.T.'s trauma score = change in trauma score during E.M.S. intervention). These values are presented in Table 68. Forty-seven percent of the cases were stabilized during E.M.S. intervention (the trauma score did not change). Five percent of the patients experienced a negative change (worsening condition) and eleven percent had a positive change (improving condition) in trauma score. However, as indicated in Table 64, 636 patients were scored a 16 on the pre-hospital trauma score and therefore could not improve any further on the scale. Consequently, of the 173 patients who had a score less than 16, 47% (82) improved.

There is a statistically significant, but relatively weak association, between E.M.S. response time and the relative change in trauma score ($p < .05$; gamma = -0.17) (Table 69). There is a trend toward more negative changes in trauma level as the response time increases.

There is also a significant (albeit weak) relationship between the change in trauma score and the time the transporting unit was on the scene ($p \leq .01$; gamma = .07). Table 70 shows that 35% of the negative group were treated on the scene for 30 to 120 minutes. Whereas most of the stabilized group were treated within 10 to 14 minutes. Forty percent of the positively changed group were treated on the scene for 20 to 30 minutes.

3. Admission/Discharge Status

Seventy-four percent (934) of the vehicular victims responded to by E.M.S. were discharged from the Emergency Department. Twenty-one percent (262) were admitted into the hospital. Two percent (26) refused E.M.S. treatment and/or transportation. One percent left the Emergency Department against medical advice.

One percent (15) of the sample were dead on arrival at the hospital, or expired during Emergency Department treatment. Less than one percent (7) were dead on the scene when the E.M.S. unit arrived (Table 71).

Of the most severely injured group (Trauma Score $\leq$ 10), 79% (11) were dead on arrival at the hospital or expired during Emergency Department treatment; 21% (3) of this group survived to be admitted to an Intensive Care Unit (Table 72).

Table 72 is noteworthy in that it shows that 54% (91) of the total number of patients admitted into the hospital (169) had a pre-hospital trauma score of 16. Of those 91 patients, 73% (66) were admitted to the general floor and 27% (25) were admitted to the Intensive Care Unit, or another unit.

Of those patients discharged, 62% had head or neck injuries, and 15% had lower limb injuries (Table 73). Thirty percent of those patients who underwent surgery had lower limb injuries, and 26 percent had abdominal or head and neck injuries.

Of those patients who underwent surgery, 44% were between the ages of 16 and 25, and 16% were over 76 years of age (Table 74).

4. Patient Outcome

In the patient outcome category, 63% (810) of the patients were categorized as restored to normal activity after pre-hospital and Emergency Department intervention, 35% (448) were categorized as temporarily disabled; less than 1% (2) were permanently disabled, and 2% (25) died during medical intervention (Table 75). Because there were only two cases that were permanently disabled, they were included in the temporarily disabled group for further analysis.

Seventy-one percent of those with head and neck injuries were restored to normal activity, and of those with abdominal injuries, 74% were temporarily disabled and 9% died (Table 76).

Thirty-six percent of those patients who were restored to normal activity were between the ages of 16 and 26 years. Twenty-one percent of those who died were between 36 and 46 years of age (Table 77).

F. DAY/WEATHER FACTORS

Most of the vehicular accidents occurred on Saturday (19%). Wednesday had the least amount of accidents reported (11%) (Table 78). Twenty percent (249) of the accidents occurred during precipitation (rain, thundershowers, or snowfall) (Table 79).

Only twenty-two percent of the car accidents, 13% of the motorcycle accidents, and 10% of the pedestrian accidents occurred during precipitation (Table 80).

Twenty-nine percent of the most severe injuries (Trauma Score $\leq$ 10) occurred during fog or precipitation (Table 81).

G. EFFECT OF BASIC VS. ADVANCED LIFE SUPPORT SERVICES ON PATIENT OUTCOME

1. Response Times

Statistically significant differences between Basic and Advanced Life Support Services were found on three time variables -response time to the scene of the accident, the amount of time the transporting unit was on the scene, and the total time to hospital care (Table 82). The times for B.L.S. units were significantly less for each time variable. The average response time for Basic units to arrive on the scene was approximately 1 minute less than that for A.L.S. units (B.L.S. = 5 minutes; A.L.S. = 6 minutes). On the average, B.L.S. transporting units were on the scene five minutes less than A.L.S. units (B.L.S. = 14 minutes; A.L.S. = 19 minutes). The average total time to hospital care differed by seven minutes for the two groups (B.L.S. = 29 minutes; A.L.S. = 36 minutes). There was no statistically significant difference found between A.L.S. and B.L.S. travel time to the hospital.

2. Short-term Patient Outcome

Patients treated by A.L.S. providers with pre-hospital trauma scores less than 16 had a statistically significant improvement in their trauma scores. Because the total number of cases was so heavily weighted with trauma scores of 16, significant changes in trauma scores were tested only on those patients with trauma scores less than 16, and for all cases less than 15.

Table 83 shows that the mean trauma score significantly increased for A.L.S. providers ($p \leq .01$) (As the trauma score increases, the severity of the injury decreases). The number of severely injured patients treated by B.L.S. services, however, was not sufficient for statistical analysis. The B.L.S. averages are presented in Table 83 for descriptive purposes, and are comparable to the differences noted in the A.L.S. scores.

While a difference of 1 point in the average trauma score may not appear to be great, a change in trauma score does alter the probability of survival. On the following page are the probabilities of survival for each value of the Trauma Score as calculated by the instruments' developers.[1]

[1] From Champion, H.R., Sacco, W.J., Carnazzo, A.J., Copes, W. and Fouty, W.J. Trauma Score. Critical Care Medicine 9: 674, 1981.

Trauma Score	Probability of Survival
16	0.99
15	0.98
14	0.95
13	0.91
12	0.83
11	0.71
10	0.55
9	0.37
8	0.22
7	0.12
6	0.07
5	0.04
4	0.02
3	0.01
2	0
1	0

As shown, the Trauma Score does have specific probabilities of survival associated with each score. The implication for this study is that the probability of survival did increase for those patients treated by Advanced Life Support providers. Unfortunately, our patient data set did not have enough critically injured patients to establish probabilities of survival.

An analysis of covariance model was used to analyze the interactive effects of level of responder and time factors on the relative change in trauma score controlling for the severity of the patient's injury. While the covariance model was statistically significant, no significant interaction effects were found for the level of responder and the three time variables (response time, time on scene, and total time to hospital) on the change in patient trauma score. However, there was a statistically significant relationship between the time variables alone and change in trauma score, taking the level of severity into account (Table 84). Although the covariance models could only account for 19% to 22% of the variance in

the change in trauma score, the data indicates that time was more critical to short-term patient outcome than the effect of the level of responder alone or the joint effects of responder and time.

3. Emergency Department Patient Outcome

Patient outcome after pre-hospital and Emergency Department treatment was analyzed on 774 cases. Only 2% of the sample (16) were most severely injured (Trauma Score $\leq$ 10), and 8% (58) severely injured (Trauma Score 11 $\leq$ 13). Consequently, the relationship between level of responder and patient outcome for the severely injured patients cannot be statistically validated because of lack of data. The first two parts of Table 85, however, indicate the distribution of the available data. For those patients receiving a trauma score of 11 through 15 and 16, there was no statistically significant relationship between level of responder and patient outcome after Emergency Department treatment.

Further statistical analysis of this outcome variable is restricted because of its categorical nature.

4. In-Patient Outcome

A follow-up study was conducted on 219 of the 262 patients admitted into the hospital. The average total length of stay in the hospital was 9.6 days (Table 86). Fifty-four patients (25%) were admitted into a critical care unit. The average length of stay in a critical care unit was six days (Table 87). Ninety-nine percent of the patients admitted into the hospital were subsequently discharged (Table 88). In total, 18 patients expired either before or after emergency medical treatment (excluding the seven that were dead on the scene of the accident). Of these, 83% (15) expired before admission into the hospital, and 17% (3) expired after admission.

Table 89 indicates the final diagnosis for the 219 admitted patients. The most frequent diagnoses were head concussion or contusion (18%), multiple trauma (17%) and fractured lower limb (13%).

Of the three patients who expired in the hospital, two had a final diagnosis of multiple trauma and one had a head concussion or contusion.

Of those discharged patients treated in a critical care unit, 38% were in the unit for 3 to 7 days (Table 90). Thirty-five percent of the total

number of discharged patients were in the hospital for a total of 3 to 7 days (Table 91).

Fifty-seven percent of the patients diagnosed with a pneumothorax who were in a CCU Unit were there over 7 days, and in the hospital for a total of 8 to 14 days (Tables 92 and 93). Forty-four percent of the patients with intra-abdominal injuries were hospitalized over 14 days.

There was no statistically significant relationship found between type of E.M.S. responder and total number of in-patient days (Table 94).

One hundred percent of the admitted patients treated by Basic EMT's and 99% of those treated by paramedics were ultimately discharged (Table 95).

The three patients who expired in the hospital were admitted to the intensive care unit (Table 96).

Fifty-seven percent of the patients admitted into a critical care unit with a pre-hospital trauma score of 16 were in the critical care unit for 3 to 7 days (Table 97). Thirty-nine percent of the patients who were in the hospital for over 14 days were given a pre-hospital trauma score of 16 (Table 98).

Twenty-four percent of the patients treated by B.L.S. providers were given a final diagnosis of multiple trauma; 18% of those treated by A.L.S. providers had a final diagnosis of head concussion or contusion (Table 99). Approximately 3% of the patients treated by both the A.L.S. and the B.L.S. providers had a final diagnosis of myocardial contusion.

Table 100 shows that 21% of the least injured patients who were admitted had a final diagnosis of head concussion or contusion; 16% of the moderately injured group had multiple trauma, 16% had fractured ribs or sternum, and 28% of the severely injured group were diagnosed with intra-abdominal injuries.

There was no statistically significant relationship found between E.M.S. response time to the scene of the accident and the total number of in-patient days (Table 101). However, of the patients who remained in the hospital over 14 days, 10% were responded to under 3 minutes, whereas 52% were responded to in 6 to 10 minutes.

VI. Discussion and Recommendations

The goals of this project were 1) to generate baseline data on pre-hospital factors such as E.M.S. response times, type of responder, and use of communications, and 2) to evaluate the effectiveness of Basic vs. Advanced Life Support services on patient outcome. We feel that most aspects of these goals were accomplished.

Throughout the analysis, one issue kept arising - that of the completeness of the documentation of information on the Oakland County E.M.S. Reporting Forms (Run Sheets). All pre-hospital data was taken from two forms - the E.M.S. Run Sheet and the Trauma Score form. The consistency of the documentation seemed to vary with the type of patient information. Variables that had a high frequency of documentation were - patient age and sex (99-100% documented), the mode of the accident (96%), and the training level of the EMT (91%). Variables with lesser frequency of documentation were: patient priority rating (89%), use of communications (79 to 83%), and E.M.S. trauma scores (B.L.S. Response - 75%; A.L.S. Response - 61%; B.L.S. and A.L.S. Response - 61%) (Table 102). Notation of a first responder on the scene was very low (9%), but there is no specific question pertaining to this on the Run Sheet other than a space for first responder CPR. Therefore, we suspect that the frequency of some of the data reported is less than what actually occurred.

The Paramedic Standard Operating Procedures requires specific protocols for the triage and treatment of patients. The documentation of such treatments and services should also be a standard operating procedure in order to insure quality of care and accurate review and audit information.

The trauma score used for this project was a separate form that was to be completed for motor vehicle trauma patients. Only 64% of all the cases treated by E.M.T.'s had completed pre-hospital trauma scores. The percentage of patient trauma scores received by the individual hospitals varied greatly. For example, three participating hospitals received less than 50% of their patients' trauma scores, while three other hospitals collected more than 75%.

It was unfortunate that the compliance rate was not higher for the trauma scores because it greatly decreased the number of patients we were able to include in many of the analyses. Because the completion of a pre-hospital trauma score is so important to conducting outcome studies of trauma patients, a more effective way of obtaining such scores should be pursued.

Another interesting finding about the trauma score was the high number of patients who were admitted into the hospital with a pre-hospital trauma score of 16. This could bring into question the inter-rater reliability of the Trauma Score or the possibility that the Score may not reflect the severity of the type of trauma that occurs from motor vehicle accidents. In addition, because of the small number of critically injured patients, the data may not fully indicate the effect of advanced treatments (i.e., IV's, medications) on the relative change in the patient trauma score during pre-hospital intervention. Nonetheless, it was beyond the scope of this project to adequately field test the index before its use, and the inter-rater reliability of the Trauma Score cannot be accurately assessed retroactively. (The inter-rater reliability of this index was tested by its developers with Emergency Department nurses and nursing research assistants. Their percentage of disagreement was 6%).[1]

The great amount of information produced by this study should not only assist the health care providers and policymakers in assessing the pre-hospital care of motor vehicle trauma victims in Oakland County, but also provide a basis for further evaluation. In order to improve the quality and quantity of data obtained in future trauma studies of this kind, the following recommendations are made: 1) Systematically pre-test the trauma score with the specific type of users and patient population in order to remove any questions of reliability, 2) Establish a policy of improving the documentation of medical data on the E.M.S. reporting forms, and 3) Extend the data collection period in order to increase the number of critically injured patients.

1 Champion, H.R., et. al., Assessment of Injury Severity: The Triage Index. Critical Care Medicine 8:204, 1980.

TABLES AND FIGURES

TABLE 1: RESPONSE TIME TO ACCIDENT - FIRST E.M.S. RESPONDER

TIME IN MINUTES	FREQUENCY	PERCENT	CUMULATIVE PERCENT
0	34	3.1	3.1
1	52	4.7	7.8
2	102	7.6	17.1
3	138	12.6	29.7
4	159	14.5	44.1
5	135	12.3	56.4
6	126	11.5	67.9
7	83	7.6	75.4
8	74	6.7	82.2
9	66	6.0	88.2
10	28	2.5	90.7
11	35	3.2	93.9
12	19	1.7	95.6
13	21	1.9	97.5
14	6	0.5	98.1
15	6	0.5	98.6
16	5	0.5	99.1
17	1	0.1	99.2
18	4	0.4	99.5
21	1	0.1	99.6
24	1	0.1	99.7
28	1	0.1	99.8
30	2	0.2	100.0
	236	missing	100.0
TOTAL	1335	100.0	

MEAN	5.592	STD ERR	0.109	MEDIAN	4.978
MODE	4.000	STD DEV	3.602	VARIANCE	12.976
KURTOSIS	5.741	SKEWNESS	1.564	RANGE	30.000
MINIMUM	0.0	MAXIMUM	30.000		

VALID CASES 1099 MISSING CASES 236

TABLE 2: RESPONSE TIME TO ACCIDENT - E.M.S. TRANSPORTER

TIME IN MINUTES	FREQUENCY	PERCENT	CUMULATIVE PERCENT
0	6	3.9	3.9
1	2	1.3	5.3
2	6	3.9	9.2
3	15	9.9	19.1
4	12	7.9	27.0
5	16	10.5	37.5
6	19	12.5	50.0
7	17	11.2	61.2
8	11	7.2	68.4
9	11	7.2	75.7
10	7	4.6	80.3
11	2	1.3	81.6
12	6	3.9	85.5
13	10	6.6	92.1
14	3	2.0	94.1
15	4	2.6	96.7
16	2	1.3	98.0
19	1	0.7	98.7
20	1	0.7	99.3
30	1	0.7	100.0
	1183	missing	100.0
TOTAL	1335	100.0	

MEAN	7.263	STD ERR	0.362	MEDIAN	6.500
MODE	6.000	STD DEV	4.460	VARIANCE	19.891
KURTOSIS	3.743	SKEWNESS	1.279	RANGE	30.000
MINIMUM	0.0	MAXIMUM	30.000		

VALID CASES 152 MISSING CASES 1183

TABLE 3: NUMBER OF EMS UNITS RESPONDING TO VEHICULAR ACCIDENTS

	FREQUENCY	PERCENT	CUMULATIVE PERCENT
TWO EMS UNITS RESPONDING	152	13.83	13.83
EMS TRANSPORTER ONLY	914	83.17	97.00
EMS NON-TRANSPORTER ONLY (Transporter is unknown or not applicable)	33	3.00	100.00
TOTAL	1099	100.00	

VALID CASES = 1099 MISSING CASES = 0

TABLE 4: E.M.S. RESPONSE TIME AND NUMBER OF UNITS ON SCENE

RESPONSE TIME		NUMBER OF UNITS 1. NR TWO EMS	2. TRANSPORTLY	3. NONTRANSPORTLY	ROW TOTAL
FT					
0 THRU 3 MIN	1.	88	210	28	326
	COUNT				
	ROW PCT	27.0	64.4	8.6	29.7
	COL PCT	57.9	23.0	84.8	
4 THRU 5 MIN	2.	38	251	5	294
	ROW PCT	12.9	85.4	1.7	26.8
	COL PCT	25.0	27.5	15.2	
6 THRU 9 MIN	3.	16	333	0	349
	ROW PCT	4.6	95.4	0.0	31.8
	COL PCT	10.5	36.4	0.0	
10 THRU 30 MIN	4.	10	120	0	130
	ROW PCT	7.7	92.3	0.0	11.8
	COL PCT	6.6	13.1	0.0	
	COLUMN TOTAL	152	914	33	1099
		13.8	83.2	3.0	100.0

1 OUT OF 12 (8.3%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 3.904
CHI SQUARE = 137.60612 WITH 6 DEGREES OF FREEDOM SIGNIFICANCE = 0.0000
CRAMER'S V = 0.25021
CONTINGENCY COEFFICIENT = 0.33358
GAMMA = 0.27264

NUMBER OF MISSING OBSERVATIONS = 236

TABLE 5: TYPE OF E.M.S. RESPONDER & RESPONSE TIME TO ACCIDENT

E.M.S. RESPONSE TIME

Type of Responder	0 thru 3 Minutes	4 thru 5 Minutes	6 thru 9 Minutes	10 thru 30 Minutes	Total
Private Ambulance	28% (267)	28% (264)	32% (306)	12% (116)	953 (69%)
Municipal/ Volunteer	47% (142)	22% (67)	22% (64)	8% (25)	299 (22%)
Unknown	37% (49)	27% (36)	19% (25)	17% (22)	132 (9%)
Total	458 (33%)	367 (26%)	396 (29%)	163 (12%)	1,384 (100%)

TABLE 6: AMOUNT OF TIME ON SCENE - E.M.S. TRANSPORTING UNIT

TIME	FREQUENCY	PERCENT	CUMULATIVE PERCENT
Less than 1 Min.	14	1.3	1.3
2 thru 3 Min.	25	2.4	3.7
4 thru 5 Min.	36	3.5	7.2
6 thru 7 Min.	91	8.7	15.9
8 thru 9 Min.	81	7.8	23.7
10 thru 14 Min.	223	21.4	45.1
15 thru 19 Min.	192	18.4	63.5
20 thru 29 Min.	228	21.9	85.4
30 thru 44 Min.	111	10.7	96.1
45 thru 60 Min.	29	2.8	98.8
61 thru 119 Min.	12	1.2	100.0
Unknown	293	Missing	100.0
	1335	100.0	

VALID CASES = 1042 MISSING CASES = 293

MEAN	18.541	STD ERR	0.407	MEDIAN	15.671
MODE	10.000	STD DEV	13.124	VARIANCE	172.251
KURTOSIS	9.586	SKEWNESS	2.252	RANGE	112.000
MINIMUM	0.0	MAXIMUM	112.000		

TABLE 7: TIME TRANSPORTING UNIT ON SCENE AND E.M.S. TRAUMA SCORE

AMOUNT OF TIME TRANSPORTING UNIT ON SCENE (TUOS)		E.M.S. TRAUMA SCORE (TS) 0 THRU 10	1 THRU 13 (1.)	11 THRU 15 (2.)	14 THRU 16 (3.)	(4.)	ROW TOTAL
0 THRU 5 MIN	1.	0	1	3	42		46
		0.0	2.2	6.5	91.3		6.3
		0.0	2.2	3.4	7.2		
6 THRU 9 MIN	2.	0	5	4	110		119
		0.0	4.2	3.4	92.4		16.4
		0.0	11.1	4.5	19.0		
10 THRU 14 MIN	3.	0	0	17	142		159
		0.0	0.0	10.7	89.3		21.9
		0.0	0.0	19.3	24.5		
15 THRU 19 MIN	4.	4	7	18	101		130
		3.1	5.4	13.8	77.7		17.9
		30.8	15.6	20.5	17.4		
20 THRU 29 MIN	5.	4	19	27	112		162
		2.5	11.7	16.7	69.1		22.3
		30.8	42.2	30.7	19.3		
30 THRU 119 MIN	6.	5	13	19	73		110
		4.5	11.8	17.3	66.4		15.2
		38.5	28.9	21.6	12.6		
COLUMN TOTAL		13	45	88	580		726
		1.8	6.2	12.1	79.9		100.0

TABLE 8: TIME TRANSPORTING UNIT ON SCENE AND PATIENT PRIORITY RATING

TUOS	PRIO 1.	2.	3.	ROW TOTAL
1.	1	10	24	35
0 THRU 5 MIN	2.9	28.6	68.6	4.8
	2.0	4.7	5.2	
2.	2	13	90	105
6 THRU 9 MIN	1.9	12.4	85.7	14.5
	4.0	6.0	19.5	
3.	4	21	130	155
10 THRU 14 MIN	2.6	13.5	83.9	21.3
	8.0	9.8	28.2	
4.	8	40	83	131
15 THRU 19 MIN	6.1	30.5	63.4	18.0
	16.0	18.6	18.0	
5.	16	70	96	182
20 THRU 29 MIN	8.8	38.5	52.7	25.1
	32.0	32.6	20.8	
6.	19	61	38	118
30 THRU 119 MIN	16.1	51.7	32.2	16.3
	38.0	28.4	8.2	
COLUMN TOTAL	50	215	461	726
	6.9	29.6	63.5	100.0

1 OUT OF 18 (5.6%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 2.410
CHI SQUARE = 112.68002 WITH 10 DEGREES OF FREEDOM SIGNIFICANCE = 0.0000
CRAMER'S V = 0.27857
CONTINGENCY COEFFICIENT = 0.36654
GAMMA = -0.48326

TABLE 9: TRAVEL TIME TO HOSPITAL

TIME	FREQUENCY	PERCENT	CUMULATIVE PERCENT
0 thru 1 Min.	31	3.0	3.0
2 thru 3 Min.	86	8.2	11.2
4 thru 5 Min.	129	12.3	23.5
6 thru 7 Min.	126	12.1	35.6
8 thru 9 Min.	138	13.2	48.8
10 thru 14 Min.	241	23.1	71.9
15 thru 19 Min.	162	15.5	87.4
20 thru 29 Min.	91	8.7	96.1
30 thru 44 Min.	38	3.6	99.7
45 thru 60 Min.	3	0.3	100.0
Unknown	290	Missing	100.0
	1335	100.0	

VALID CASES = 1045 MISSING CASES = 290

MEAN	11.354	STD ERR	0.242	MEDIAN	9.649
MODE	10.000	STD DEV	7.822	VARIANCE	61.190
KURTOSIS	2.591	SKEWNESS	1.399	RANGE	52.000
MINIMUM	0.0	MAXIMUM	52.000		

TABLE 10: TRAVEL TIME TO HOSPITAL AND PATIENT PRIORITY RATING

TTH	PRIO 1.	2.	3.	ROW TOTAL
1.	12	49	99	160
0 THRU 5 MIN	7.5	30.6	61.9	22.0
	24.0	22.5	21.5	
2.	15	48	117	180
6 THRU 9 MIN	8.3	26.7	65.0	24.7
	30.0	22.0	25.4	
3.	10	48	112	170
10 THRU 14 MIN	5.9	28.2	65.9	23.4
	20.0	22.0	24.3	
4.	10	35	70	115
15 THRU 19 MIN	8.7	30.4	60.9	15.8
	20.0	16.1	15.2	
5.	3	22	47	72
20 THRU 29 MIN	4.2	30.6	65.3	9.9
	6.0	10.1	10.2	
6.	0	16	15	31
30 THRU 119 MIN	0.0	51.6	48.4	4.3
	0.0	7.3	3.3	
COLUMN TOTAL	50	218	460	728
	6.9	29.9	63.2	100.0

2 OUT OF 18 (11.1%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 2.129
CHI SQUARE = 11.61966 WITH 10 DEGREES OF FREEDOM SIGNIFICANCE = 0.3113
CRAMER'S V = 0.08933
CONTINGENCY COEFFICIENT = 0.12534
GAMMA = -0.01000

TABLE 11: ARRIVAL AT HOSPITAL - E.M.S. TRANSPORTING UNIT

TIME	FREQUENCY	PERCENT	CUMULATIVE PERCENT
Midnight to 3 AM	157	13.6	13.6
3 to 6 AM	88	7.6	21.2
6 to 9 AM	76	6.6	27.8
9 to Noon	111	9.6	37.4
Noon to 3 PM	189	16.4	53.8
3 to 6 PM	196	17.0	70.8
6 to 9 PM	172	14.9	85.7
9 to Midnight	163	14.1	100.0
Unknown	183	Missing	100.0
TOTAL	1335	100.0	

VALID CASES = 1152 MISSING CASES = 183

TABLE 12: E.M.S. TRAUMA SCORE AND HOSPITAL ARRIVAL TIME

TS		1. 12 AM TO 3 AM	2. 3 AM TO 6 AM	3. 6 AM TO 9 AM	4. 9 AM TO 12 PM	5. 12 PM TO 3 PM	6. 3 PM TO 6 PM	7. 6 PM TO 9 PM	8. 9 PM TO 12 AM	ROW TOTAL
0 THRU 10	1. COUNT	2	1	1	2	2	3	2	3	16
	ROW PCT	12.5	6.3	6.3	12.5	12.5	18.8	12.5	18.8	2.0
	COL PCT	1.4	1.8	1.9	2.5	1.6	2.6	1.7	2.5	
11 THRU 13	2. COUNT	13	8	5	4	6	8	3	12	59
	ROW PCT	22.0	13.6	8.5	6.8	10.2	13.6	5.1	20.3	7.3
	COL PCT	8.8	14.5	9.6	5.0	4.9	6.9	2.5	10.2	
14 THRU 15	3. COUNT	27	5	7	10	10	13	11	15	98
	ROW PCT	27.6	5.1	7.1	10.2	10.2	13.3	11.2	15.3	12.1
	COL PCT	18.4	9.1	13.5	12.5	8.2	11.2	9.2	12.7	
16	4. COUNT	105	41	39	64	104	92	103	88	636
	ROW PCT	16.5	6.4	6.1	10.1	16.4	14.5	16.2	13.8	78.6
	COL PCT	71.4	74.5	75.0	80.0	85.2	79.3	86.6	74.6	
	COLUMN TOTAL	147	55	52	80	122	116	119	118	809
		18.2	6.8	6.4	9.9	15.1	14.3	14.7	14.6	100.0

TABLE 13: RECEIVING HOSPITAL

HOSPITAL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
WM. BEAUMONT/RO	311	23.8	23.8
BOTSFORD	185	14.2	37.9
CRITTENTON	100	7.7	45.6
MARTIN PLACE	28	2.1	47.7
PONTIAC GENERAL	161	12.3	60.1
PONTIAC OSTEOPATHIC	156	11.9	72.0
PROVIDENCE	85	6.5	78.5
ST. JOSEPH MERCY	240	18.4	96.9
WM. BEAUMONT/TROY	41	3.1	100.0
NOT APPLICABLE	28	Missing	100.0
	1335	100.0	

VALID CASES = 1307 MISSING CASES = 28

TABLE 14: E.M.S. TRAUMA SCORE AND RECEIVING HOSPITAL

TS	HOSP / COUNT / ROW PCT / COL PCT	1. WBHRO	2. BOTSFORD	3. CRITTENTON	4. MARTIN P LACE	5. PONTIAC GENERAL	6. PONTIAC OSTEO	7. PROVIDENCE	8. ST.JOSEP H	9. WBHT	ROW TOTAL
0 THRU 10	1.	1	2	3	0	3	4	1	2	0	16
		6.3	12.5	18.8	0.0	18.8	25.0	6.3	12.5	0.0	2.0
		0.5	1.4	3.0	0.0	3.0	5.2	3.1	2.2	0.0	
11 THRU 13	2.	8	14	5	4	9	7	1	10	1	59
		13.6	23.7	8.5	6.8	15.3	11.9	1.7	16.9	1.7	7.3
		3.8	9.9	5.1	22.2	8.9	9.1	3.1	10.8	2.7	
14 THRU 15	3.	21	17	15	6	18	11	0	8	2	98
		21.4	17.3	15.3	6.1	18.4	11.2	0.0	8.2	2.0	12.1
		10.0	12.1	15.2	33.3	17.8	14.3	0.0	8.6	5.4	
16	4.	181	108	76	8	71	55	30	73	34	636
		28.5	17.0	11.9	1.3	11.2	8.6	4.7	11.5	5.3	78.6
		85.8	76.6	76.8	44.4	70.3	71.4	93.8	78.5	91.9	
	COLUMN TOTAL	211	141	99	18	101	77	32	93	37	809
		26.1	17.4	12.2	2.2	12.5	9.5	4.0	11.5	4.6	100.0

TABLE 15: PERCENTAGE OF PRE-HOSPITAL TRAUMA SCORES COMPLETED FOR EACH RECEIVING HOSPITAL

	PATIENT FREQUENCY	COMPLETED E.M.S. TRAUMA SCORE FREQUENCY	PERCENTAGE COMPLIANCE
William Beaumont/R.O.	311	211	68%
Botsford	185	141	76%
Crittenton	100	99	99%
Martin Place	28	18	64%
Pontiac General	161	101	63%
Pontiac Osteopathic	156	77	49%
Providence	85	32	38%
St. Joseph Mercy	240	93	39%
William Beaumont/Troy	41	37	90%
TOTAL	1307	809	62%

TABLE 16: PATIENT PRIORITY RATING

PRIORITY LEVEL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1 - SEVERE - LIFE THREAT-ENING	53	6.2	6.2
2 - NON-LIFE THREATENING	260	30.6	36.8
3 - NON-URGENT	538	63.2	100.0
NOT APPLICABLE	484	Missing	100.0
TOTAL	1335	100.0	

VALID CASES = 851 MISSING CASES = 484

MEAN	2.570	STD ERR	0.021	MEDIAN	2.709
MODE	3.000	STD DEV	0.608	VARIANCE	0.370
KURTOSIS	0.171	SKEWNESS	-1.102	RANGE	2.000
MINIMUM	1.000	MAXIMUM	3.000		

TABLE 17: NUMBER OF CHANGED PRIORITY RATINGS DURING E.M.S. INTERVENTION

CHANGED PRIORITY	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1 - SEVERE - LIFE-THREATENING	4	25.0	25.0
2 - NON-LIFE-THREATENING	6	37.5	62.5
3 - NON-URGENT	6	37.5	100.0
NOT APPLICABLE	1319	Missing	100.0
	1335	100.0	

VALID CASES = 16 MISSING CASES = 1319

MEAN	2.125	STD ERR	0.202	MEDIAN	2.167
MODE	2.000	STD DEV	0.806	VARIANCE	0.650
KURTOSIS	-1.368	SKEWNESS	-0.245	RANGE	2.000
MINIMUM	1.000	MAXIMUM	3.000		

TABLE 18: PATIENT PRIORITY RATING AND RECEIVING HOSPITAL

RIO	HOSP	1. IWBHRO	2. BOTSFORD	3. CRITTENTON	4. MARTIN LACE	5. PONTIAC GENERAL	6. PONTIAC OSTEO	7. PROVIDENCE	8. ST.JOSEPH	9. WBHT	ROW TOTAL
1.	COUNT	3	9	6	1	4	15	5	9	1	53
	ROW PCT	5.7	17.0	11.3	1.9	7.5	28.3	9.4	17.0	1.9	6.3
	COL PCT	2.7	8.0	6.0	12.5	3.7	11.3	7.2	5.2	3.4	
2.	COUNT	25	31	23	3	41	47	39	47	4	260
	ROW PCT	9.6	11.9	8.8	1.2	15.8	18.1	15.0	18.1	1.5	30.8
	COL PCT	22.1	27.7	23.0	37.5	38.0	35.3	56.5	27.3	13.8	
3.	COUNT	85	72	71	4	63	71	25	116	24	531
	ROW PCT	16.0	13.6	13.4	0.8	11.9	13.4	4.7	21.8	4.5	62.9
	COL PCT	75.2	64.3	71.0	50.0	58.3	53.4	36.2	67.4	82.8	
COLUMN TOTAL		113	112	100	8	108	133	69	172	29	844
		13.4	13.3	11.8	0.9	12.8	15.8	8.2	20.4	3.4	100.0

4 OUT OF 27 (14.8%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 0.502
CHI SQUARE = 53.20593 WITH 16 DEGREES OF FREEDOM SIGNIFICANCE = 0.0000
CRAMER'S V = 0.17754
CONTINGENCY COEFFICIENT = 0.24352
GAMMA = -0.07804

NUMBER OF MISSING OBSERVATIONS = 491

TABLE 19: TOTAL TIME TO HOSPITAL CARE

	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1 thru 10 minutes	40	3.7	3.7
11 thru 20 minutes	173	15.9	19.6
21 thru 30 minutes	313	28.8	48.4
31 thru 45 minutes	315	29.00	77.4
46 thru 60 minutes	148	13.6	91.0
61 thru 142 minutes	96	8.9	99.9
Total	1085	100.0	

Mean	34.829	Std Err	554	Median	31.286
Mode	30.000	Std Dev	18.240	Variance	332.704
Kurtosis	3.412	Skewness	1.346	Range	141.000
Minimum	1.000	Maximum	142.000		

TABLE 20: PATIENT AGE

AGE	FREQUENCY	PERCENT	CUMULATIVE PERCENT
0 thru 5 Years	35	2.7	2.7
6 thru 15 Years	124	9.4	12.1
16 thru 25 Years	483	36.6	48.7
26 thru 35 Years	264	20.0	68.7
36 thru 45 Years	154	11.7	80.4
46 thru 55 Years	97	7.4	87.8
56 thru 65 Years	87	6.6	94.4
66 thru 75 Years	33	2.5	96.9
76 thru 85 Years	38	2.9	99.8
86 thru 98 Years	3	0.2	100.0
Unknown	17	Missing	100.0
	1335	100.0	

VALID CASES = 1318 MISSING CASES = 17

MEAN	30.747	STD ERR	0.496	MEDIAN	25.750
MODE	18.000	STD DEV	18.105	VARIANCE	327.810
KURTOSIS	0.574	SKEWNESS	0.964	RANGE	94.000
MINIMUM	0.0	MAXIMUM	94.000		

TABLE 21: PATIENT SEX

SEX	FREQUENCY	PERCENT	CUMULATIVE PERCENT
MALE	750	56.3	56.3
FEMALE	582	43.7	100.0
UNKNOWN	3	Missing	100.0
	1335	100.0	

VALID CASES = 1332 MISSING CASES = 3

TABLE 22: PATIENT AGE AND SEX

AGE	SEX: MALE (1.)	SEX: FEMALE (2.)	ROW TOTAL
1. 0 THRU 5 YR	24	11	35
	68.6	31.4	2.7
	3.2	1.9	
2. 6 THRU 15 YR	76	48	124
	61.3	38.7	9.4
	10.3	8.3	
3. 16 THRU 25 YR	277	206	483
	57.3	42.7	36.6
	37.4	35.6	
4. 26 THRU 35 YR	157	107	264
	59.5	40.5	20.0
	21.2	18.5	
5. 36 THRU 45 YR	81	73	154
	52.6	47.4	11.7
	10.9	12.6	
6. 46 THRU 55 YR	49	48	97
	50.5	49.5	7.4
	6.6	8.3	
7. 56 THRU 65 YR	40	47	87
	46.0	54.0	6.6
	5.4	8.1	
8. 66 THRU 75 YR	17	16	33
	51.5	48.5	2.5
	2.3	2.8	
9. 76 THRU 98 YR	19	22	41
	46.3	53.7	3.1
	2.6	3.8	
COLUMN TOTAL	740	578	1318
	56.1	43.9	100.0

CHI SQUARE = 12.57460 WITH 8 DEGREES OF FREEDOM SIGNIFICANCE = 0.1273
CRAMER'S V = 0.09768
CONTINGENCY COEFFICIENT = 0.09721
GAMMA = 0.11425

TABLE 23: USE OF SEAT BELT

SEAT BELT	FREQUENCY	PERCENT	CUMULATIVE PERCENT
YES	83	9.6	9.6
NO	781	90.4	100.0
NOT APPLICABLE/UNKNOWN	471	Missing	100.0
	1335	100.0	

VALID CASES = 864 MISSING CASES = 471

TABLE 24: PATIENT AGE AND USE OF SEATBELT

AGE	STBLT: YES (1.)	STBLT: NO (2.)	ROW TOTAL
1. 0 THRU 5 YR	4	21	25
ROW PCT	16.0	84.0	2.9
COL PCT	4.9	2.7	
2. 6 THRU 15 YR	3	48	51
ROW PCT	5.9	94.1	6.0
COL PCT	3.7	6.2	
3. 16 THRU 25 YR	22	286	308
ROW PCT	7.1	92.9	36.1
COL PCT	26.8	37.1	
4. 26 THRU 35 YR	19	157	176
ROW PCT	10.8	89.2	20.6
COL PCT	23.2	20.4	
5. 36 THRU 45 YR	9	100	109
ROW PCT	8.3	91.7	12.8
COL PCT	11.0	13.0	
6. 46 THRU 55 YR	9	58	67
ROW PCT	13.4	86.6	7.9
COL PCT	11.0	7.5	
7. 56 THRU 65 YR	10	57	67
ROW PCT	14.9	85.1	7.9
COL PCT	12.2	7.4	
8. 66 THRU 75 YR	4	19	23
ROW PCT	17.4	82.6	2.7
COL PCT	4.9	2.5	
9. 76 THRU 98 YR	2	25	27
ROW PCT	7.4	92.6	3.2
COL PCT	2.4	3.2	
COLUMN TOTAL	82	771	853
	9.6	90.4	100.0

TABLE 26: E.M.S. TRAUMA SCORE AND USE OF SEAT BELT

E.M.S. TRAUMA SCORE	STBLT: YES (1.)	STBLT: NO (2.)	ROW TOTAL
1. 0 THRU 10	1	7	8
	12.5	87.5	1.3
	1.8	1.3	
2. 11 THRU 13	1	43	44
	2.3	97.7	7.4
	1.8	8.0	
3. 14 THRU 15	6	64	70
	8.6	91.4	11.8
	10.9	11.9	
4. 16	47	426	473
	9.9	90.1	79.5
	85.5	78.9	
COLUMN TOTAL	55	540	595
	9.2	90.8	100.0

TABLE 27: TYPE OF MOTOR VEHICLE TRAUMA VICTIM

VEHICLE/VICTIM	FREQUENCY	PERCENT	CUMULATIVE PERCENT
TRUCK	13	1.0	1.0
CAR	1063	82.7	83.7
MOTORCYCLE	113	8.8	92.5
SNOWMOBILE	1	0.1	92.6
PEDESTRIAN	73	5.7	98.3
BICYCLE	22	1.7	100.0
UNKNOWN	50	Missing	100.0
	1335	100.0	

VALID CASES = 1285 MISSING CASES = 50

TABLE 28: TYPE OF TRAUMA VICTIM AND AGE

VICTIM	COUNT / ROW PCT / COL PCT	AGE 10 THRU 5 YR (1.)	6 THRU 15 YR (2.)	16 THRU 25 YR (3.)	26 THRU 35 YR (4.)	36 THRU 45 YR (5.)	46 THRU 55 YR (6.)	56 THRU 65 YR (7.)	66 THRU 75 YR (8.)	76 THRU 98 YR (9.)	ROW TOTAL
1. TRUCK		0	0	4	3	3	1	1	1	0	13
		0.0	0.0	30.8	23.1	23.1	7.7	7.7	7.7	0.0	1.0
		0.0	0.0	0.9	1.2	2.1	1.1	1.2	3.2	0.0	
2. CAR		30	58	391	219	131	79	79	29	34	1050
		2.9	5.5	37.2	20.9	12.5	7.5	7.5	2.8	3.2	82.7
		88.2	47.2	84.1	85.2	90.3	86.8	91.9	93.5	89.5	
3. MOCYCLE		0	18	51	28	8	5	2	0	0	112
		0.0	16.1	45.5	25.0	7.1	4.5	1.8	0.0	0.0	8.8
		0.0	14.6	11.0	10.9	5.5	5.5	2.3	0.0	0.0	
5. PEDESTRIAN		3	34	14	5	3	5	4	1	4	73
		4.1	46.6	19.2	6.8	4.1	6.8	5.5	1.4	5.5	5.7
		8.8	27.6	3.0	1.9	2.1	5.5	4.7	3.2	10.5	
6. BICYCLE		1	13	5	2	0	1	0	0	0	22
		4.5	59.1	22.7	9.1	0.0	4.5	0.0	0.0	0.0	1.7
		2.9	10.6	1.1	0.8	0.0	1.1	0.0	0.0	0.0	
COLUMN TOTAL		34	123	465	257	145	91	86	31	38	1270
		2.7	9.7	36.6	20.2	11.4	7.2	6.8	2.4	3.0	100.0

TABLE 29. TYPE OF TRAUMA VICTIM AND SEX

VICTIM	SEX: MALE (1.)	SEX: FEMALE (2.)	ROW TOTAL
1. TRUCK	12	1	13
	92.3	7.7	1.0
	1.7	0.2	
2. CAR	563	499	1062
	53.0	47.0	82.8
	78.4	88.3	
3. MOCYCLE	88	25	113
	77.9	22.1	8.8
	12.3	4.4	
5. PEDESTRIAN	40	33	73
	54.8	45.2	5.7
	5.6	5.8	
6. BICYCLE	15	7	22
	68.2	31.8	1.7
	2.1	1.2	
COLUMN TOTAL	718	565	1283
	56.0	44.0	100.0

CHI SQUARE = 34.10828 WITH 4 DEGREES OF FREEDOM SIGNIFICANCE = 0.0000
CRAMER'S V = 0.16305
CONTINGENCY COEFFICIENT = 0.16092
GAMMA = -0.22106

NUMBER OF MISSING OBSERVATIONS = 52

TABLE 30: FIRST RESPONDER (EXCLUDING OAKLAND COUNTY E.M.S.)

RESPONDER	FREQUENCY	PERCENT	CUMULATIVE PERCENT
POLICE	47	37.9	37.9
CITIZEN	19	15.3	53.2
PHYSICIAN	3	2.4	55.6
SUPPORTING UNIT	11	8.9	64.5
AMBULANCE COMPANY	5	4.0	68.5
OTHER	39	31.5	100.0
UNKNOWN/NOT APPLICABLE	1211	Missing	100.0
	1335	100.0	

VALID CASES = 124 MISSING CASES = 1211

TABLE 31: FIRST RESPONDER TREATMENT (EXCLUDING OAKLAND COUNTY E.M.S.)

TREATMENT	FREQUENCY	PERCENT	CUMULATIVE PERCENT
EXTRICATION	14	12.7	12.7
CPR	6	5.5	18.2
OXYGEN	1	0.9	19.1
BANDAGING	17	15.5	34.5
SPLINTING	16	14.5	49.1
HEMORRHAGE CONTROL	1	0.9	50.0
OTHER	55	50.0	100.0
UNKNOWN	1225	Missing	100.0
	1335	100.0	

VALID CASES = 110 MISSING CASES = 1225

TABLE 32: FIRST RESPONDER AND TREATMENT

FA	FRT	EXTR	CPR	OXYG	BAND	SPLINT	HEM CONT ROL	OTHER	ROW TOTAL
		1.	2.	3.	4.	5.	6.	7.	
POLICE	1.	5	2	1	5	3	1	19	36
		13.9	5.6	2.8	13.9	8.3	2.8	52.8	34.6
		38.5	33.3	100.0	29.4	23.1	100.0	35.8	
CITIZEN	2.	3	3	0	2	0	0	11	19
		15.8	15.8	0.0	10.5	0.0	0.0	57.9	18.3
		23.1	50.0	0.0	11.8	0.0	0.0	20.8	
PHYSICIAN	3.	0	0	0	0	0	0	2	2
		0.0	0.0	0.0	0.0	0.0	0.0	100.0	1.9
		0.0	0.0	0.0	0.0	0.0	0.0	3.8	
SUPPORTING	4.	3	1	0	0	0	0	4	8
		37.5	12.5	0.0	0.0	0.0	0.0	50.0	7.7
		23.1	16.7	0.0	0.0	0.0	0.0	7.5	
AMBULANCE	5.	0	0	0	0	0	0	5	5
		0.0	0.0	0.0	0.0	0.0	0.0	100.0	4.8
		0.0	0.0	0.0	0.0	0.0	0.0	9.4	
OTHER	6.	2	0	0	10	10	0	12	34
		5.9	0.0	0.0	29.4	29.4	0.0	35.3	32.7
		15.4	0.0	0.0	58.8	76.9	0.0	22.6	
COLUMN TOTAL		13	6	1	17	13	1	53	104
		12.5	5.8	1.0	16.3	12.5	1.0	51.0	100.0

TABLE 33: TRAINING LEVEL OF E.M.S. RESPONDERS

E.M.S. UNIT	FREQUENCY	PERCENT	CUMULATIVE PERCENT
BLS ONLY	266	21.8	21.8
ALS ONLY	780	63.9	85.7
BLS & ALS	174	14.3	100.0
UNKNOWN	115	Missing	100.0
	1335	100.0	

VALID CASES = 1220 MISSING CASES = 115

TABLE 34: E.M.S. TRAUMA SCORE AND LEVEL OF RESPONDER

TS	RESPOND: 1. BLS ONLY	2. ALS ONLY	3. BLS ALS	ROW TOTAL
1. 0 THRU 10	2	7	7	16
	12.5	43.8	43.8	2.0
	1.0	1.5	6.5	
2. 11 THRU 13	12	41	5	58
	20.7	70.7	8.6	7.4
	6.0	8.6	4.7	
3. 14 THRU 15	16	63	15	94
	17.0	67.0	16.0	12.0
	8.0	13.2	14.0	
4. 16	170	365	80	615
	27.6	59.3	13.0	78.5
	85.0	76.7	74.8	
COLUMN TOTAL	200	476	107	783
	25.5	60.8	13.7	100.0

TABLE 35: BASIC LIFE SUPPORT TREATMENTS

TREATMENT	FREQUENCY	PERCENT	CUMULATIVE PERCENT
OXYGEN	4	1.4	1.4
CPR	1	0.3	1.7
SPLINTING	85	29.7	31.5
BANDAGING	59	20.6	52.1
HEMORRHAGE CONTROL	8	2.8	54.9
OTHER	129	45.1	100.0
UNKNOWN	1049	Missing	100.0
	1335	100.0	

VALID CASES = 286 MISSING CASES = 1049

TABLE 36: E.M.S. TRAUMA SCORE AND BASIC LIFE SUPPORT TREATMENTS

TS	BTR OXYGEN 3.	CPR 4.	SPLINT 5.	BANDAGE 6.	HEM CONT 7.	OTHER 9.	ROW TOTAL
1. 0 THRU 10	1	1	0	0	1	3	6
	16.7	16.7	0.0	0.0	16.7	50.0	2.9
	33.3	100.0	0.0	0.0	20.0	3.7	
2. 11 THRU 13	1	0	4	2	0	4	11
	9.1	0.0	36.4	18.2	0.0	36.4	5.4
	33.3	0.0	6.0	4.3	0.0	4.9	
3. 14 THRU 15	0	0	11	7	0	10	28
	0.0	0.0	39.3	25.0	0.0	35.7	13.7
	0.0	0.0	16.4	14.9	0.0	12.3	
4. 16	1	0	52	38	4	64	159
	0.6	0.0	32.7	23.9	2.5	40.3	77.9
	33.3	0.0	77.6	80.9	80.0	79.0	
COLUMN TOTAL	3	1	67	47	5	81	204
	1.5	0.5	32.8	23.0	2.5	39.7	100.0

TABLE 37: TIME TRANSPORTING UNIT ON SCENE AND BASIC LIFE SUPPORT TREATMENT

TUOS	BTR	OXYGEN 3.	CPR 4.	SPLINT 5.	BANDAGE 6.	HEM CONT ROL 7.	OTHER 9.	ROW TOTAL
1. 0 THRU 5 MIN	COUNT	0	0	6	7	0	13	26
	ROW PCT	0.0	0.0	23.1	26.9	0.0	50.0	11.3
	COL PCT	0.0	0.0	8.2	14.0	0.0	13.4	
2. 6 THRU 9 MIN	COUNT	0	0	17	10	3	15	45
	ROW PCT	0.0	0.0	37.8	22.2	6.7	33.3	19.6
	COL PCT	0.0	0.0	23.3	20.0	50.0	15.5	
3. 10 THRU 14 MIN	COUNT	0	0	17	11	2	12	42
	ROW PCT	0.0	0.0	40.5	26.2	4.8	28.6	18.3
	COL PCT	0.0	0.0	23.3	22.0	33.3	12.4	
4. 15 THRU 19 MIN	COUNT	1	0	17	7	0	12	37
	ROW PCT	2.7	0.0	45.9	18.9	0.0	32.4	16.1
	COL PCT	33.3	0.0	23.3	14.0	0.0	12.4	
5. 20 THRU 29 MIN	COUNT	1	0	12	11	1	24	49
	ROW PCT	2.0	0.0	24.5	22.4	2.0	49.0	21.3
	COL PCT	33.3	0.0	16.4	22.0	16.7	24.7	
6. 30 THRU 119 MIN	COUNT	1	1	4	4	0	21	31
	ROW PCT	3.2	3.2	12.9	12.9	0.0	67.7	13.5
	COL PCT	33.3	100.0	5.5	8.0	0.0	21.6	
COLUMN TOTAL		3	1	73	50	6	97	230
		1.3	0.4	31.7	21.7	2.6	42.2	100.0

TABLE 38: ADVANCED LIFE SUPPORT TREATMENTS

TREATMENTS	FREQUENCY	PERCENT	CUMULATIVE PERCENT
OXYGEN	7	0.9	0.9
CPR	1	0.1	1.0
SPLINTING	257	32.9	33.9
BANDAGING	181	23.2	57.1
HEMORRHAGE CONTROL	22	2.8	59.9
ANTI-SHOCK TROUSERS	1	0.1	60.1
IV	100	12.8	72.9
MEDICATIONS	30	3.8	76.7
OTHER	182	23.3	100.0
UNKNOWN	554	Missing	100.0
	1335	100.0	

VALID CASES = 781 MISSING CASES = 554

TABLE 39: E.M.S. TRAUMA SCORE AND ADVANCED LIFE SUPPORT TREATMENTS

TS	ATR COUNT / ROW PCT / COL PCT	OXYGEN 5.	SPLINT 7.	BANDAGE 8.	HEM CONT ROL 9.	MAST 10.	IV 11.	MEDS 13.	OTHER 14.	EKG 15.	ROW TOTAL
0 THRU 10	1.	0	0	0	0	0	2	4	2	6	14
		0.0	0.0	0.0	0.0	0.0	14.3	28.6	14.3	42.9	2.9
		0.0	0.0	0.0	0.0	0.0	3.3	33.3	1.9	22.2	
11 THRU 13	2.	0	5	0	0	0	20	4	5	7	41
		0.0	12.2	0.0	0.0	0.0	48.8	9.8	12.2	17.1	8.4
		0.0	3.5	0.0	0.0	0.0	33.3	33.3	4.8	25.9	
14 THRU 15	3.	2	13	8	1	1	20	3	18	6	72
		2.8	18.1	11.1	1.4	1.4	27.8	4.2	25.0	8.3	14.8
		66.7	9.2	6.5	6.7	100.0	33.3	25.0	17.3	22.2	
16	4.	1	124	115	14	0	18	1	79	8	360
		0.3	34.4	31.9	3.9	0.0	5.0	0.3	21.9	2.2	73.9
		33.3	87.3	93.5	93.3	0.0	30.0	8.3	76.0	29.6	
	COLUMN TOTAL	3	142	123	15	1	60	12	104	27	487
		0.6	29.2	25.3	3.1	0.2	12.3	2.5	21.4	5.5	100.0

TABLE 40: TIME TRANSPORTING UNITS ON SCENE AND ADVANCED LIFE SUPPORT TREATMENTS

TUOS	ATR	OXYGEN 5.	CPR 6.	SPLINT 7.	BANDAGE 8.	HEM CONT ROL 9.	MAST 10.	IV 11.	MEDS 13.	OTHER 14.	EKG 15.	ROW TOTAL
1.	COUNT	0	0	11	2	2	0	0	0	13	0	28
0 THRU 5 MIN	ROW PCT	0.0	0.0	39.3	7.1	7.1	0.0	0.0	0.0	46.4	0.0	4.2
	COL PCT	0.0	0.0	5.2	1.3	10.5	0.0	0.0	0.0	9.3	0.0	
2.	COUNT	0	0	33	25	4	0	0	0	22	1	85
6 THRU 9 MIN	ROW PCT	0.0	0.0	38.8	29.4	4.7	0.0	0.0	0.0	25.9	1.2	12.8
	COL PCT	0.0	0.0	15.6	16.3	21.1	0.0	0.0	0.0	15.7	2.4	
3.	COUNT	1	1	57	35	5	0	1	2	29	5	136
10 THRU 14 MIN	ROW PCT	0.7	0.7	41.9	25.7	3.7	0.0	0.7	1.5	21.3	3.7	20.5
	COL PCT	16.7	100.0	27.0	22.9	26.3	0.0	1.4	11.1	20.7	11.9	
4.	COUNT	3	0	39	31	2	0	8	4	23	7	117
15 THRU 19 MIN	ROW PCT	2.6	0.0	33.3	26.5	1.7	0.0	6.8	3.4	19.7	6.0	17.6
	COL PCT	50.0	0.0	18.5	20.3	10.5	0.0	11.0	22.2	16.4	16.7	
5.	COUNT	0	0	40	33	5	1	34	6	36	13	168
20 THRU 29 MIN	ROW PCT	0.0	0.0	23.8	19.6	3.0	0.6	20.2	3.6	21.4	7.7	25.3
	COL PCT	0.0	0.0	19.0	21.6	26.3	100.0	46.6	33.3	25.7	31.0	
6.	COUNT	2	0	31	27	1	0	30	6	17	16	130
30 THRU 119 MIN	ROW PCT	1.5	0.0	23.8	20.8	0.8	0.0	23.1	4.6	13.1	12.3	19.6
	COL PCT	33.3	0.0	14.7	17.6	5.3	0.0	41.1	33.3	12.1	38.1	
COLUMN TOTAL		6	1	211	153	19	1	73	18	140	42	664
		0.9	0.2	31.8	23.0	2.9	0.2	11.0	2.7	21.1	6.3	100.0

TABLE 41: USE OF HEAR SYSTEM

SYSTEM USED	FREQUENCY	PERCENT	CUMULATIVE PERCENT
YES	225	21.3	21.3
NO	830	78.7	100.0
UNKNOWN	280	Missing	100.0
	1335	100.0	

VALID CASES = 1055 MISSING CASES = 280

TABLE 42: HOSPITAL CONTACTED BY HEAR SYSTEM

HOSPITAL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
WM. BEAUMONT/RO	13	5.7	5.7
BOTSFORD	3	1.3	7.0
CRITTENTON	52	22.9	30.0
MARTIN PLACE	4	1.8	31.7
PONTIAC GENERAL	53	23.3	55.1
PONTIAC OSTEOPATHIC	24	10.6	65.6
PROVIDENCE	23	10.1	75.8
ST. JOSEPH MERCY	49	21.6	97.4
WM. BEAUMONT/TROY	6	2.6	100.0
NOT APPLICABLE	825	Missing	100.0
UNKNOWN	283	Missing	100.0
	1335	100.0	

VALID CASES = 227 MISSING CASES = 1108

TABLE 43: E.M.S. TRAUMA SCORE AND USE OF HEAR

TS	HEAR: YES (1.)	HEAR: NO (2.)	ROW TOTAL
1. 0 THRU 10	1	10	11
ROW PCT	9.1	90.9	1.6
COL PCT	0.6	1.9	
2. 11 THRU 13	5	46	51
ROW PCT	9.8	90.2	7.5
COL PCT	3.2	8.8	
3. 14 THRU 15	18	60	78
ROW PCT	23.1	76.9	11.5
COL PCT	11.7	11.5	
4. 16	130	408	538
ROW PCT	24.2	75.8	79.4
COL PCT	84.4	77.9	
COLUMN TOTAL	154	524	678
	22.7	77.3	100.0

1 OUT OF 8 (12.5%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 2.499
CHI SQUARE = 6.65486 WITH 3 DEGREES OF FREEDOM SIGNIFICANCE = 0.0838
CRAMER'S V = 0.09907
CONTINGENCY COEFFICIENT = 0.09859
GAMMA = -0.22555

TABLE 44: LEVEL OF RESPONDER AND USE OF HEAR

RESPOND	HEAR YES (1.)	HEAR NO (2.)	RCW TOTAL
1. BLS ONLY	44	176	220
	20.0	80.0	21.2
	19.9	21.5	
2. ALS ONLY	147	530	677
	21.7	78.3	65.2
	66.5	64.8	
3. BLS ALS	30	112	142
	21.1	78.9	13.7
	13.6	13.7	
COLUMN TOTAL	221	818	1039
	21.3	78.7	100.0

CHI SQUARE = 0.29313 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.8637
CRAMER'S V = 0.01680
CONTINGENCY COEFFICIENT = 0.01679
GAMMA = -0.02550

TABLE 45: PATIENT PRIORITY RATING AND USE OF HEAR

PRIO	HEAR 1. YES	HEAR 2. NO	ROW TOTAL
1.	4	45	49
	8.2	91.8	6.3
	2.3	7.5	
2.	30	203	233
	12.9	87.1	30.2
	17.1	34.0	
3.	141	349	490
	28.8	71.2	63.5
	80.6	58.5	
COLUMN TOTAL	175	597	772
	22.7	77.3	100.0

CHI SQUARE = 29.05313 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.0000
CRAMER'S V = 0.19399
CONTINGENCY COEFFICIENT = 0.19044
GAMMA = -0.48249

TABLE 46: TYPE OF HOSPITAL COMMUNICATIONS

COMMUNICATIONS	FREQUENCY	PERCENT	CUMULATIVE PERCENT
RADIO	428	91.1	91.1
TELEPHONE	42	8.9	100.0
NOT APPLICABLE/UNKNOWN	865	Missing	100.0
TOTAL	1335	100.0	

VALID CASES = 470 MISSING CASES = 818

TABLE 47: HOSPITALS CONTACTED VIA RADIO, OR TELEPHONE

HOSPITAL	FREQUENCY	PERCENT	CUMULATIVE PERCENT
WM. BEAUMONT/RO	22	4.1	4.1
BOTSFORD	44	8.2	12.4
CRITTENTON	18	3.4	15.7
MARTIN PLACE	7	1.3	17.0
PONTIAC GENERAL	70	13.1	30.1
PONTIAC OSTEOPATHIC	250	46.8	77.0
PROVIDENCE	69	12.9	89.9
ST. JOSEPH MERCY	49	9.2	99.1
WM. BEAUMONT/TROY	5	0.9	100.0
NOT APPLICABLE	583	Missing	100.0
UNKNOWN	218	Missing	100.0
	1335	100.0	

VALID CASES = 534 MISSING CASES = 801

TABLE 48: DOCUMENTATION OF PRE-HOSPITAL COMMUNICATIONS

USE OF RADIO CONTROL	FREQUENCY	RELATIVE PERCENT	ADJUSTED PERCENT	CUMULATIVE PERCENT
YES	477	35.7	42.8	42.8
NO	638	47.8	57.2	100.0
MISSING	220	16.5	MISSING	
	1335	100.0	100.0	

USE OF TELEPHONE	FREQUENCY	RELATIVE PERCENT	ADJUSTED PERCENT	CUMULATIVE PERCENT
YES	42	3.1	3.8	3.8
NO	1060	79.4	96.2	100.0
MISSING	233	17.5	MISSING	
	1335	100.0	100.0	

USE OF HEAR	FREQUENCY	RELATIVE PERCENT	ADJUSTED PERCENT	CUMULATIVE PERCENT
YES	225	16.9	21.3	21.3
NO	830	62.2	78.7	100.0
MISSING	280	21.0	MISSING	
	1335	100.0	100.0	

TABLE 49: COMMUNICATION PROBLEMS

PROBLEMS	FREQUENCY	PERCENT	CUMULATIVE PERCENT
YES	69	9.8	9.8
NO	638	90.2	100.0
NOT APPLICABLE	338	Missing	100.0
UNKNOWN	290	Missing	100.0
	1335	100.0	

VALID CASES = 707 MISSING CASES = 628

TABLE 50: E.M.S. TRAUMA SCORE AND USE OF THE UHF RADIO

	RAD		
COUNT / ROW PCT / COL PCT	YES 1.	NO 2.	ROW TOTAL
0 THRU 10 (1.)	10 / 76.9 / 4.0	3 / 23.1 / 0.6	13 / 1.8
11 THRU 13 (2.)	37 / 69.8 / 14.7	16 / 30.2 / 3.4	53 / 7.4
14 THRU 15 (3.)	37 / 42.0 / 14.7	51 / 58.0 / 10.9	88 / 12.2
16 (4.)	168 / 29.6 / 66.7	399 / 70.4 / 85.1	567 / 78.6
COLUMN TOTAL	252 / 35.0	469 / 65.0	721 / 100.0

1 OUT OF 8 (12.5%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 4.544
CHI SQUARE = 47.41243 WITH 3 DEGREES OF FREEDOM SIGNIFICANCE = 0.0000
CRAMER'S V = 0.25644
CONTINGENCY COEFFICIENT = 0.24840
GAMMA = 0.48305

NUMBER OF MISSING OBSERVATIONS = 614

TABLE 51: E.M.S. TRAUMA SCORE AND USE OF TELEPHONE

	TEL		
COUNT / ROW PCT / COL PCT	YES	NO	ROW TOTAL
	1.	2.	
1. 0 THRU 10	0 0.0 0.0	13 100.0 1.9	13 1.8
2. 11 THRU 13	2 3.8 7.1	50 96.2 7.3	52 7.3
3. 14 THRU 15	4 4.6 14.3	83 95.4 12.1	87 12.2
4. 16	22 3.9 78.6	541 96.1 78.7	563 78.7
COLUMN TOTAL	28 3.9	687 96.1	715 100.0

TABLE 52: E.M.S. TRAUMA SCORE AND HOSPITAL CONTACTED

TS	COUNT / ROW PCT / COL PCT	HOCOM 1.	BOTSFORD 2.	CRITTENTON 3.	MARTIN P LACE 4.	PONTIAC GENERAL 5.	PONTIAC OSTEOPAT 6.	PROVIDENCE 7.	ST.JOSEPH 8.	WBHT 9.	RCW TOTAL
0 THRU 10	1.	0	2	1	0	4	4	1	0	0	12
		0.0	16.7	8.3	0.0	33.3	33.3	8.3	0.0	0.0	4.1
		0.0	5.3	7.1	0.0	8.5	3.5	3.7	0.0	0.0	
11 THRU 13	2.	3	7	1	3	6	10	4	4	0	38
		7.9	18.4	2.6	7.9	15.8	26.3	10.5	10.5	0.0	13.1
		17.6	18.4	7.1	75.0	12.8	8.8	14.8	15.4	0.0	
14 THRU 15	3.	5	3	5	0	11	15	1	0	0	40
		12.5	7.5	12.5	0.0	27.5	37.5	2.5	0.0	0.0	13.8
		29.4	7.9	35.7	0.0	23.4	13.2	3.7	0.0	0.0	
16	4.	9	26	7	1	26	85	21	22	3	200
		4.5	13.0	3.5	0.5	13.0	42.5	10.5	11.0	1.5	69.0
		52.9	68.4	50.0	25.0	55.3	74.6	77.8	84.6	100.0	
	COLUMN TOTAL	17	38	14	4	47	114	27	26	3	290
		5.9	13.1	4.8	1.4	16.2	39.3	9.3	9.0	1.0	100.0

TABLE 53: LEVEL OF E.M.S. RESPONDER AND TYPE OF COMMUNICATIONS

RESPOND	COUNT / ROW PCT / COL PCT	COH RADIO 1.	COH TELEPHONE 2.	ROW TOTAL
BLS ONLY	1.	3	9	12
		25.0	75.0	3.1
		0.9	26.5	
ALS ONLY	2.	349	25	374
		93.3	6.7	96.9
		99.1	73.5	
	COLUMN TOTAL	352	34	386
		91.2	8.8	100.0

TABLE 54: PATIENT PRIORITY RATING AND TYPE OF COMMUNICATIONS

PRIO	COUNT / ROW PCT / COL PCT	COH RADIO 1.	COH TELEPHONE 2.	ROW TOTAL
1.		28	0	28
		100.0	0.0	6.7
		7.4	0.0	
2.		167	14	181
		92.3	7.7	43.4
		44.3	35.0	
3.		182	26	208
		87.5	12.5	49.9
		48.3	65.0	
COLUMN TOTAL		377	40	417
		90.4	9.6	100.0

1 OUT OF 6 (16.7%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 2.686
CHI SQUARE = 5.71877 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.0573
CRAMER'S V = 0.11711
CONTINGENCY COEFFICIENT = 0.11631
GAMMA = 0.36380

NUMBER OF MISSING OBSERVATIONS = 918

TABLE 55: USE OF TELEPHONE AND TELEMETRY AND ADVANCED LIFE SUPPORT TREATMENTS

COH	COUNT / ROW PCT / COL PCT	ATR OXYGEN 5.	CPR 6.	SPLINT 7.	BANDAGE 8.	HEM CONT RCL 9.	MAST 10.	IV 11.	MEDS 13.	OTHER 14.	ROW TOTAL
RADIO	1.	4	1	114	91	10	0	66	16	64	366
		1.1	0.3	31.1	24.9	2.7	0.0	18.0	4.4	17.5	83.9
		80.0	100.0	91.2	95.8	90.9	0.0	78.6	57.1	74.4	
TELEPHONE	2.	0	0	9	4	1	1	2	0	10	27
		0.0	0.0	33.3	14.8	3.7	3.7	7.4	0.0	37.0	6.2
		0.0	0.0	7.2	4.2	9.1	100.0	2.4	0.0	11.6	
EKG	3.	1	0	2	0	0	0	16	12	12	43
		2.3	0.0	4.7	0.0	0.0	0.0	37.2	27.9	27.9	9.9
		20.0	0.0	1.6	0.0	0.0	0.0	19.0	42.9	14.0	
	COLUMN TOTAL	5	1	125	95	11	1	84	28	86	436
		1.1	0.2	28.7	21.8	2.5	0.2	19.3	6.4	19.7	100.0

TABLE 56: BASIC LIFE SUPPORT TREATMENTS AND TYPE OF COMMUNICATIONS

BTR	COUNT / ROW PCT / COL PCT	COH: RADIO (1.)	COH: TELEPHONE (2.)	ROW TOTAL
SPLINT	5.	8	7	15
		53.3	46.7	28.3
		21.6	43.8	
BANDAGE	6.	6	2	8
		75.0	25.0	15.1
		16.2	12.5	
HEM CONTROL	7.	2	0	2
		100.0	0.0	3.8
		5.4	0.0	
OTHER	9.	21	7	28
		75.0	25.0	52.8
		56.8	43.8	
	COLUMN TOTAL	37	16	53
		69.8	30.2	100.0

TABLE 57: BODY AREA INJURED

BODY AREA	FREQUENCY	PERCENT	CUMULATIVE PERCENT
HEAD/NECK	687	58.2	58.2
THORAX	106	8.9	67.1
ABDOMEN	35	2.9	70.0
SPINE/PELVIS	68	5.8	75.8
UPPER LIMB	118	10.0	85.8
LOWER LIMB	166	14.1	100.0
UNKNOWN	155	Missing	100.0
	1335	100.0	

VALID CASES = 1180 MISSING CASES = 155

TABLE 58: BODY AREA INJURED AND E.M.S. TRAUMA SCORE

BAI		TS 10 THRU 13 (1.)	11 THRU 14 (2.)	14 THRU 15 (3.)	16 (4.)	ROW TOTAL
1. HEAD AND NECK	COUNT	8	33	41	336	418
	ROW PCT	1.9	7.9	9.8	80.4	56.8
	COL PCT	57.1	56.9	48.8	57.9	
2. THORAX	COUNT	3	7	16	46	72
	ROW PCT	4.2	9.7	22.2	63.9	9.8
	COL PCT	21.4	12.1	19.0	7.9	
3. ABDOMEN	COUNT	3	7	5	10	25
	ROW PCT	12.0	28.0	20.0	40.0	3.4
	COL PCT	21.4	12.1	6.0	1.7	
4. SPINE AND PELVIS	COUNT	0	3	5	31	39
	ROW PCT	0.0	7.7	12.8	79.5	5.3
	COL PCT	0.0	5.2	6.0	5.3	
5. UPPER LIMB	COUNT	0	2	8	61	71
	ROW PCT	0.0	2.8	11.3	85.9	9.6
	COL PCT	0.0	3.4	9.5	10.5	
6. LOWER LIMB	COUNT	0	6	9	96	111
	ROW PCT	0.0	5.4	8.1	86.5	15.1
	COL PCT	0.0	10.3	10.7	16.6	
COLUMN TOTAL		14	58	84	580	736
		1.9	7.9	11.4	78.8	100.0

TABLE 59: BODY AREA INJURED AND LEVEL OF RESPONDER

BAI	RESPOND: 1. BLS ONLY	2. ALS ONLY	3. BLS ALS	ROW TOTAL
1. HEAD AND NECK	135	404	100	639
	21.1	63.2	15.6	58.7
	57.4	58.1	62.9	
2. THORAX	21	63	15	99
	21.2	63.6	15.2	9.1
	8.9	9.1	9.4	
3. ABDOMEN	5	21	6	32
	15.6	65.6	18.8	2.9
	2.1	3.0	3.8	
4. SPINE AND PELVIS	18	39	4	61
	29.5	63.9	6.6	5.6
	7.7	5.6	2.5	
5. UPPER LIMB	19	73	17	109
	17.4	67.0	15.6	10.0
	8.1	10.5	10.7	
6. LOWER LIMB	37	95	17	149
	24.8	63.8	11.4	13.7
	15.7	13.7	10.7	
COLUMN TOTAL	235	695	159	1089
	21.6	63.8	14.6	100.0

1 OUT OF 18 (5.6%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 4.672
CHI SQUARE = 8.88734 WITH 10 DEGREES OF FREEDOM SIGNIFICANCE = 0.5428
CRAMER'S V = 0.06388
CONTINGENCY COEFFICIENT = 0.08997
GAMMA = -0.05478

TABLE 60: TYPE OF COMMUNICATIONS AND BODY AREA INJURED

COH	BAI	1. HEAD AND NECK	2. THORAX	3. ABDOMEN	4. SPINE AND PELVIS	5. UPPER LIMB	6. LOWER LIMB	ROW TOTAL
1. RADIO	COUNT	223	38	13	18	41	49	382
	ROW PCT	58.4	9.9	3.4	4.7	10.7	12.8	92.3
	COL PCT	93.3	92.7	100.0	94.7	93.2	84.5	
2. TELEPHONE	COUNT	16	3	0	1	3	9	32
	ROW PCT	50.0	9.4	0.0	3.1	9.4	28.1	7.7
	COL PCT	6.7	7.3	0.0	5.3	6.8	15.5	
COLUMN TOTAL		239	41	13	19	44	58	414
		57.7	9.9	3.1	4.6	10.6	14.0	100.0

TABLE 61: BODY AREA INJURED AND PATIENT AGE

	AGE									
COUNT ROW PCT COL PCT	10 THRU 5 YR	6 THRU 15 YR	16 THRU 25 YR	26 THRU 35 YR	36 THRU 45 YR	46 THRU 55 YR	56 THRU 65 YR	66 THRU 75 YR	76 THRU 98 YR	ROW TOTAL
	1.	2.	3.	4.	5.	6.	7.	8.	9.	
1. HEAD AND NECK	27 4.0 96.4	53 7.8 47.7	248 36.4 58.2	149 21.8 62.9	86 12.6 60.6	47 6.9 56.6	39 5.7 50.6	16 2.3 55.2	17 2.5 47.2	682 58.3
2. THORAX	0 0.0 0.0	11 10.5 9.9	26 24.8 6.1	21 20.0 8.9	12 11.4 8.5	10 9.5 12.0	11 10.5 14.3	4 3.8 13.8	10 9.5 27.8	105 9.0
3. ABDOMEN	0 0.0 0.0	2 5.9 1.8	14 41.2 3.3	6 17.6 2.5	5 14.7 3.5	3 8.8 3.6	2 5.9 2.6	1 2.9 3.4	1 2.9 2.8	34 2.9
4. SPINE AND PELVIS	0 0.0 0.0	2 3.0 1.8	25 37.3 5.9	12 17.9 5.1	13 19.4 9.2	7 10.4 8.4	7 10.4 9.1	1 1.5 3.4	0 0.0 0.0	67 5.7
5. UPPER LIMB	0 0.0 0.0	6 5.2 5.4	56 48.3 13.1	22 19.0 9.3	13 11.2 9.2	5 4.3 6.0	7 6.0 9.1	3 2.6 10.3	4 3.4 11.1	116 9.9
6. LOWER LIMB	1 0.6 3.6	37 22.4 33.3	57 34.5 13.4	27 16.4 11.4	13 7.9 9.2	11 6.7 13.3	11 6.7 14.3	4 2.4 13.8	4 2.4 11.1	165 14.1
COLUMN TOTAL	28 2.4	111 9.5	426 36.4	237 20.3	142 12.1	83 7.1	77 6.6	29 2.5	36 3.1	1169 100.0

TABLE 62: BODY AREA INJURED AND USE OF SEAT BELT

BAI	STBLT		ROW TOTAL
	COUNT / ROW PCT / COL PCT	YES 1.	NO 2.	
1. HEAD AND NECK		43	429	472
		9.1	90.9	61.8
		58.1	62.2	
2. THORAX		10	68	78
		12.8	87.2	10.2
		13.5	9.9	
3. ABDOMEN		2	16	18
		11.1	88.9	2.4
		2.7	2.3	
4. SPINE AND PELVIS		9	38	47
		19.1	80.9	6.2
		12.2	5.5	
5. UPPER LIMB		4	69	73
		5.5	94.5	9.6
		5.4	10.0	
6. LOWER LIMB		6	70	76
		7.9	92.1	9.9
		8.1	10.1	
COLUMN TOTAL		74	690	764
		9.7	90.3	100.0

2 OUT OF 12 (16.7%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 1.743
CHI SQUARE = 7.66341 WITH 5 DEGREES OF FREEDOM SIGNIFICANCE = 0.1758
CRAMER'S V = 0.10015
CONTINGENCY COEFFICIENT = 0.09965
GAMMA = -0.02550

TABLE 63: BODY AREA INJURED AND TYPE OF TRAUMA VICTIM

BAI	VICTIM COUNT / ROW PCT / COL PCT	TRUCK 1.	CAR 2.	MOCYCLE 3.	PEDESTRIAN 5.	BICYCLE 6.	ROW TOTAL
1. HEAD AND NECK		5	587	23	33	8	656
		0.8	89.5	3.5	5.0	1.2	57.7
		41.7	62.4	22.5	52.4	40.0	
2. THORAX		1	91	9	2	0	103
		1.0	88.3	8.7	1.9	0.0	9.1
		8.3	9.7	8.8	3.2	0.0	
3. ABDOMEN		3	20	3	6	0	32
		9.4	62.5	9.4	18.8	0.0	2.8
		25.0	2.1	2.9	9.5	0.0	
4. SPINE AND PELVIS		1	53	9	3	0	66
		1.5	80.3	13.6	4.5	0.0	5.8
		8.3	5.6	8.8	4.8	0.0	
5. UPPER LIMB		0	91	21	2	2	116
		0.0	78.4	18.1	1.7	1.7	10.2
		0.0	9.7	20.6	3.2	10.0	
6. LOWER LIMB		2	98	37	17	10	164
		1.2	59.8	22.6	10.4	6.1	14.4
		16.7	10.4	36.3	27.0	50.0	
COLUMN TOTAL		12	940	102	63	20	1137
		1.1	82.7	9.0	5.5	1.8	100.0

TABLE 64: E.M.S. TRAUMA SCORES

SCORE	FREQUENCY	PERCENT	CUMULATIVE PERCENT
0	1	0.1	0.1
1	11	1.4	1.5
3	1	0.1	1.6
8	1	0.1	1.7
9	1	0.1	1.9
10	1	0.1	2.0
11	13	1.6	3.6
12	22	2.7	6.3
13	24	3.0	9.3
14	26	3.2	12.5
15	72	8.9	21.4
16	636	78.6	100.0
UNKNOWN	526	Missing	100.0
	1335	100.0	

VALID CASES = 809 MISSING CASES = 526

MEAN	15.303	STD ERR	0.075	MEDIAN	15.864
MODE	16.000	STD DEV	2.147	VARIANCE	4.610
KURTOSIS	29.333	SKEWNESS	-5.062	RANGE	16.000
MINIMUM	0.0	MAXIMUM	16.000		

TABLE 65: LEVEL OF RESPONDER COMPLETING PATIENT TRAUMA SCORE

E.M.S. UNIT	FREQUENCY	PERCENT	CUMULATIVE PERCENT
ALS UNIT	574	71.8	71.8
BLS UNIT	225	28.2	100.0
UNKNOWN	536	Missing	100.0
	1335	100.0	

VALID CASES = 799 MISSING CASES = 536

TABLE 66: EMERGENCY DEPARTMENT TRAUMA SCORES

SCORE	FREQUENCY	PERCENT	CUMULATIVE PERCENT
0	4	0.4	0.4
1	15	1.3	1.7
3	1	0.1	1.8
4	1	0.1	1.9
9	1	0.1	2.0
10	5	0.4	2.4
11	6	0.5	3.0
12	14	1.3	4.2
13	21	1.9	6.1
14	28	2.5	8.6
15	84	7.5	16.1
16	935	83.9	100.0
UNKNOWN	220	Missing	100.0
	1335	100.0	

VALID CASES = 1115 MISSING CASES = 220

MEAN	15.426	STD ERR	0.066	MEDIAN	15.904
MODE	16.000	STD DEV	2.188	VARIANCE	4.787
KURTOSIS	33.552	SKEWNESS	-5.623	RANGE	16.000
MINIMUM	0.0	MAXIMUM	16.000		

TABLE 67: TYPE OF PROVIDER COMPLETING PATIENT TRAUMA SCORE

COMPLETED BY	FREQUENCY	PERCENT	CUMULATIVE PERCENT
PHYSICIAN	173	15.8	15.8
NURSE	920	84.2	100.0
UNKNOWN	242	Missing	100.0
	1335	100.0	

VALID CASES = 1093 MISSING CASES = 242

TABLE 68: CHANGE IN PATIENT TRAUMA SCORE DURING E.M.S. INTERVENTION

DIRECTIONAL CHANGE OF PATIENT TRAUMA SCORE	ABSOLUTE FREQUENCY	PERCENT	CUMULATIVE PERCENT
-5 THRU -1	40	5.4	5.4
0	624	83.6	89.0
1 THRU 5	82	11.0	100.0
	589	MISSING	100.0
TOTAL	1335	100.0	

VALID CASES = 746 MISSING CASES = 589

MEAN	0.125	STD ERR	0.031	MEDIAN	0.037
MODE	0.0	STD DEV	0.836	VARIANCE	0.699
KURTOSIS	13.847	SKEWNESS	1.674	RANGE	10.000
MINIMUM	-5.000	MAXIMUM	5.000		

TABLE 69: CHANGE IN TRAUMA SCORE AND E.M.S. RESPONSE TIME

CTS		EMS RESPONSE TIME: 10 THRU 3 MIN (1.)	4 THRU 5 MIN (2.)	6 THRU 9 MIN (3.)	10 THRU 30 MIN (4.)	ROW TOTAL
-5 THRU -1	1.	3	9	21	6	39
	ROW PCT	7.7	23.1	53.8	15.4	5.7
	COL PCT	1.7	4.7	9.4	6.5	
0	2.	157	160	180	81	578
	ROW PCT	27.2	27.7	31.1	14.0	84.4
	COL PCT	88.7	83.3	80.7	87.1	
1 THRU 5	3.	17	23	22	6	68
	ROW PCT	25.0	33.8	32.4	8.8	9.9
	COL PCT	9.6	12.0	9.9	6.5	
	COLUMN TOTAL	177	192	223	93	685
	COLUMN TOTAL	25.8	28.0	32.6	13.6	100.0

CHI SQUARE = 13.65417 WITH 6 DEGREES OF FREEDOM SIGNIFICANCE = 0.0337
CRAMER'S V = 0.09983
CONTINGENCY COEFFICIENT = 0.13980
GAMMA = -0.16994

TABLE 70: CHANGE IN TRAUMA SCORE AND TIME TRANSPORTING UNIT ON SCENE

CTS		TUOS 1. 10 THRU 5 MIN	2. 6 THRU 9 MIN	3. 10 THRU 14 MIN	4. 15 THRU 19 MIN	5. 20 THRU 29 MIN	6. 30 THRU 119 MIN	ROW TOTAL
-5 THRU -1	1. COUNT	1	4	6	7	8	14	40
	ROW PCT	2.5	10.0	15.0	17.5	20.0	35.0	5.9
	COL PCT	2.3	3.8	3.9	5.8	5.1	14.6	
0	2. COUNT	41	97	138	104	123	69	572
	ROW PCT	7.2	17.0	24.1	18.2	21.5	12.1	84.7
	COL PCT	93.2	91.5	90.2	86.7	78.8	71.9	
1 THRU 5	3. COUNT	2	5	9	9	25	13	63
	ROW PCT	3.2	7.9	14.3	14.3	39.7	20.6	9.3
	COL PCT	4.5	4.7	5.9	7.5	16.0	13.5	
COLUMN TOTAL		44	106	153	120	156	96	675
		6.5	15.7	22.7	17.8	23.1	14.2	100.0

2 OUT OF 18 (11.1%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 2.607
CHI SQUARE = 34.40858 WITH 10 DEGREES OF FREEDOM SIGNIFICANCE = 0.0002
CRAMER'S V = 0.15965
CONTINGENCY COEFFICIENT = 0.22023
GAMMA = 0.06822

TABLE 71: ADMISSION/DISCHARGE STATUS

ADMISSION/DISCHARGE	FREQUENCY	PERCENT	CUMULATIVE PERCENT
DISCHARGED	934	74.0	74.0
ADM. TO GENERAL FLOOR	168	13.3	87.3
ADM. TO O.R.	25	2.0	89.3
ADM. TO I.C.U.	57	4.5	93.8
ADM. TO OTHER	12	1.0	94.8
REF. TREATMENT/TRANSPORT	26	2.1	96.8
LEFT E.D. - A.M.A.	18	1.4	98.3
D.O.A. - SCENE	7	0.6	98.8
D.O.A. - E.D.	15	1.2	100.0
UNKNOWN	73	Missing	100.0
	1335	100.0	

VALID CASES = 1262 MISSING CASES = 73

TABLE 72: ADMISSION / DISCHARGE STATUS AND E.M.S. TRAUMA SCORE

AD	TS	1. 10 THRU 13	2. 11 THRU 14	3. 14 THRU 15	4. 16	ROW TOTAL
1. PT DISCHARGED	COUNT	0	15	50	515	580
	ROW PCT	0.0	2.6	8.6	88.8	76.3
	COL PCT	0.0	30.0	55.6	85.0	
2. PT ADMITTED General Floor	COUNT	0	13	24	66	103
	ROW PCT	0.0	12.6	23.3	64.1	13.6
	COL PCT	0.0	26.0	26.7	10.9	
3. PT ADMITTED OR	COUNT	0	5	4	8	17
	ROW PCT	0.0	29.4	23.5	47.1	2.2
	COL PCT	0.0	10.0	4.4	1.3	
4. PT ADMITTED ICU	COUNT	3	16	12	9	40
	ROW PCT	7.5	40.0	30.0	22.5	5.3
	COL PCT	21.4	32.0	13.3	1.5	
5. PT ADMITTED Other	COUNT	0	1	0	8	9
	ROW PCT	0.0	11.1	0.0	88.9	1.2
	COL PCT	0.0	2.0	0.0	1.3	
9. PT DOA EXP ED	COUNT	11	0	0	0	11
	ROW PCT	100.0	0.0	0.0	0.0	1.4
	COL PCT	78.6	0.0	0.0	0.0	
COLUMN TOTAL		14	50	90	606	760
		1.8	6.6	11.8	79.7	100.0

TABLE 73: ADMISSION/DISCHARGE STATUS AND BODY AREA INJURED

AD	BAI	1. HEAD AND NECK	2. THORAX	3. ABDOMEN	4. SPINE AND PELVIS	5. UPPER LIMB	6. LOWER LIMB	ROW TOTAL
1. PT DISCHARGED	COUNT	528	53	9	43	95	123	851
	ROW PCT	62.0	6.2	1.1	5.1	11.2	14.5	76.4
	COL PCT	81.6	53.5	25.7	65.2	86.4	78.3	
2. PT ADMITTED General Floor	COUNT	77	27	13	19	6	20	162
	ROW PCT	47.5	16.7	8.0	11.7	3.7	12.3	14.5
	COL PCT	11.9	27.3	37.1	28.8	5.5	12.7	
3. PT ADMITTED OR	COUNT	6	2	6	1	1	7	23
	ROW PCT	26.1	8.7	26.1	4.3	4.3	30.4	2.1
	COL PCT	0.9	2.0	17.1	1.5	0.9	4.5	
4. PT ADMITTED ICU	COUNT	26	11	4	3	4	5	53
	ROW PCT	49.1	20.8	7.5	5.7	7.5	9.4	4.8
	COL PCT	4.0	11.1	11.4	4.5	3.6	3.2	
5. PT ADMITTED Other	COUNT	4	2	0	0	4	2	12
	ROW PCT	33.3	16.7	0.0	0.0	33.3	16.7	1.1
	COL PCT	0.6	2.0	0.0	0.0	3.6	1.3	
9. PT DOA EXP ED	COUNT	6	4	3	0	0	0	13
	ROW PCT	46.2	30.8	23.1	0.0	0.0	0.0	1.2
	COL PCT	0.9	4.0	8.6	0.0	0.0	0.0	
COLUMN TOTAL		647	99	35	66	110	157	1114
		58.1	8.9	3.1	5.9	9.9	14.1	100.0

TABLE 74: ADMISSION / DISCHARGE STATUS AND PATIENT AGE

	AGE									
COUNT / ROW PCT / COL PCT	10 THRU 5 YR	6 THRU 15 YR	16 THRU 25 YR	26 THRU 35 YR	36 THRU 45 YR	46 THRU 55 YR	56 THRU 65 YR	66 THRU 75 YR	76 THRU 98 YR	ROW TOTAL
	1.	2.	3.	4.	5.	6.	7.	8.	9.	
1. DISCHARGED	28	84	350	183	110	71	63	22	20	931
	3.0	9.0	37.6	19.7	11.8	7.6	6.8	2.4	2.1	77.4
	87.5	73.0	78.8	78.5	77.5	78.0	77.8	71.0	58.8	
2. ADMITTED General Floor	4	22	62	30	15	10	11	7	4	165
	2.4	13.3	37.6	18.2	9.1	6.1	6.7	4.2	2.4	13.7
	12.5	19.1	14.0	12.9	10.6	11.0	13.6	22.6	11.8	
3. ADMITTED OR	0	2	11	3	2	2	1	0	4	25
	0.0	8.0	44.0	12.0	8.0	8.0	4.0	0.0	16.0	2.1
	0.0	1.7	2.5	1.3	1.4	2.2	1.2	0.0	11.8	
4. ADMITTED ICU	0	4	15	13	10	7	5	0	2	56
	0.0	7.1	26.8	23.2	17.9	12.5	8.9	0.0	3.6	4.7
	0.0	3.5	3.4	5.6	7.0	7.7	6.2	0.0	5.9	
5. ADMITTED Other	0	1	4	3	1	0	0	0	2	11
	0.0	9.1	36.4	27.3	9.1	0.0	0.0	0.0	18.2	0.9
	0.0	0.9	0.9	1.3	0.7	0.0	0.0	0.0	5.9	
9. DOA EXP ED	0	2	2	1	4	1	1	2	2	15
	0.0	13.3	13.3	6.7	26.7	6.7	6.7	13.3	13.3	1.2
	0.0	1.7	0.5	0.4	2.8	1.1	1.2	6.5	5.9	
COLUMN TOTAL	32	115	444	233	142	91	81	31	34	1203
	2.7	9.6	36.9	19.4	11.8	7.6	6.7	2.6	2.8	100.0

TABLE 75: PATIENT OUTCOME AFTER EMERGENCY DEPARTMENT TREATMENT

OUTCOME	FREQUENCY	PERCENT	CUMULATIVE PERCENT
RESTORE TO NORMAL	810	63.0	63.0
TEMPORARY DISABILITY	448	34.9	97.9
PERMANENT DISABILITY	2	0.2	98.1
DEATH	25	1.9	100.0
UNKNOWN	50	Missing	100.0
	1335	100.0	

VALID CASES = 1285 MISSING CASES = 50

MEAN	1.410	STD ERR	0.017	MEDIAN	1.293
MODE	1.000	STD DEV	0.602	VARIANCE	0.362
KURTOSIS	4.244	SKEWNESS	1.713	RANGE	3.000
MINIMUM	1.000	MAXIMUM	4.000		

TABLE 76: PATIENT OUTCOME AND BODY AREA INJURED

PTOUT	BAI	1. HEAD AND NECK	2. THORAX	3. ABDOMEN	4. SPINE AND PELVIS	5. UPPER LIMB	6. LOWER LIMB	ROW TOTAL
1. RESTORE NORMAL	COUNT	482	41	6	36	66	83	714
	ROW PCT	67.5	5.7	0.8	5.0	9.2	11.6	61.6
	COL PCT	71.4	38.7	17.6	53.7	57.4	50.9	
2. TEMPORARY DISABI	COUNT	181	61	25	31	49	80	427
	ROW PCT	42.4	14.3	5.9	7.3	11.5	18.7	36.8
	COL PCT	26.8	57.5	73.5	46.3	42.6	49.1	
3. DEATH	COUNT	12	4	3	0	0	0	19
	ROW PCT	63.2	21.1	15.8	0.0	0.0	0.0	1.6
	COL PCT	1.8	3.8	8.8	0.0	0.0	0.0	
COLUMN TOTAL		675	106	34	67	115	163	1160
		58.2	9.1	2.9	5.8	9.9	14.1	100.0

TABLE 77: PATIENT OUTCOME AND PATIENT AGE

PTOUT	AGE	0 THRU 5 YR	6 THRU 15 YR	16 THRU 25 YR	26 THRU 35 YR	36 THRU 45 YR	46 THRU 55 YR	56 THRU 65 YR	66 THRU 75 YR	76 THRU 98 YR	ROW TOTAL
		1.	2.	3.	4.	5.	6.	7.	8.	9.	
1. RESTORE NORMAL	COUNT	27	74	293	167	87	62	57	22	18	807
	ROW PCT	3.3	9.2	36.3	20.7	10.8	7.7	7.1	2.7	2.2	63.3
	COL PCT	77.1	61.7	64.0	65.2	57.2	65.3	67.1	66.7	45.0	
2. TEMPORARY DISABI	COUNT	8	44	162	85	60	31	26	9	18	443
	ROW PCT	1.8	9.9	36.6	19.2	13.5	7.0	5.9	2.0	4.1	34.8
	COL PCT	22.9	36.7	35.4	33.2	39.5	32.6	30.6	27.3	45.0	
3. DEATH	COUNT	0	2	3	4	5	2	2	2	4	24
	ROW PCT	0.0	8.3	12.5	16.7	20.8	8.3	8.3	8.3	16.7	1.9
	COL PCT	0.0	1.7	0.7	1.6	3.3	2.1	2.4	6.1	10.0	
COLUMN TOTAL		35	120	458	256	152	95	85	33	40	1274
		2.7	9.4	35.9	20.1	11.9	7.5	6.7	2.6	3.1	100.0

TABLE 78: DAY OF THE WEEK

DAY	FREQUENCY	PERCENT	CUMULATIVE PERCENT
SUNDAY	220	16.5	16.5
MONDAY	155	11.6	28.1
TUESDAY	168	12.6	40.7
WEDNESDAY	151	11.3	52.0
THURSDAY	167	12.5	64.5
FRIDAY	214	16.0	80.6
SATURDAY	259	19.4	100.0
UNKNOWN	1	Missing	100.0
	1335	100.0	

VALID CASES = 1334 MISSING CASES = 1

TABLE 79: WEATHER AT TIME OF THE ACCIDENT

WEATHER	FREQUENCY	PERCENT	CUMULATIVE PERCENT
SUNNY	259	20.5	20.5
CLEAR (Dark Hours Only)	324	25.7	46.2
CLOUDY	401	31.8	78.0
FOG	28	2.2	80.3
RAIN	184	14.6	94.8
THUNDERSTORMS	26	2.1	96.9
SNOW	39	3.1	100.0
UNKNOWN	74	Missing	100.0
	1335	100.0	

VALID CASES = 1261 MISSING CASES = 74

TABLE 80: TYPE OF TRAUMA VICTIM AND WEATHER

VICTIM	COUNT / ROW PCT / COL PCT	WEA SUNNY 1.	CLEAR 2.	CLOUDY 3.	FOG 4.	RAIN 5.	THUNDERS HOWERS 6.	SNOW 7.	ROW TOTAL
TRUCK	1.	5	6	2	0	0	0	0	13
		38.5	46.2	15.4	0.0	0.0	0.0	0.0	1.1
		2.0	1.9	0.5	0.0	0.0	0.0	0.0	
CAR	2.	185	262	322	23	160	24	32	1008
		18.4	26.0	31.9	2.3	15.9	2.4	3.2	82.4
		73.1	82.9	82.6	92.0	89.4	96.0	91.4	
MOCYCLE	3.	36	31	28	1	12	1	1	110
		32.7	28.2	25.5	0.9	10.9	0.9	0.9	9.0
		14.2	9.8	7.2	4.0	6.7	4.0	2.9	
PEDESTRIAN	5.	21	13	28	1	5	0	2	70
		30.0	18.6	40.0	1.4	7.1	0.0	2.9	5.7
		8.3	4.1	7.2	4.0	2.8	0.0	5.7	
BICYCLE	6.	6	4	10	0	2	0	0	22
		27.3	18.2	45.5	0.0	9.1	0.0	0.0	1.8
		2.4	1.3	2.6	0.0	1.1	0.0	0.0	
	COLUMN TOTAL	253	316	390	25	179	25	35	1223
		20.7	25.8	31.9	2.0	14.6	2.0	2.9	100.0

TABLE 81: B.M.S. TRAUMA SCORE AND WEATHER AT TIME OF THE ACCIDENT

TS	WEA	1. SUNNY	2. CLEAR	3. CLOUDY	4. FOG	5. RAIN	6. THUNDERS HOWERS	7. SNOW	ROW TOTAL
0 THRU 10	1.	3	3	4	2	1	0	1	14
		21.4	21.4	28.6	14.3	7.1	0.0	7.1	1.8
		1.8	1.6	1.6	12.5	0.8	0.0	3.7	
11 THRU 13	2.	6	14	20	3	6	2	3	54
		11.1	25.9	37.0	5.6	11.1	3.7	5.6	6.9
		3.6	7.4	8.2	18.8	4.9	10.0	11.1	
14 THRU 15	3.	19	30	24	1	13	4	4	95
		20.0	31.6	25.3	1.1	13.7	4.2	4.2	12.1
		11.3	15.9	9.8	6.3	10.7	20.0	14.8	
16	4.	140	142	196	10	102	14	19	623
		22.5	22.8	31.5	1.6	16.4	2.2	3.0	79.3
		83.3	75.1	80.3	62.5	83.6	70.0	70.4	
COLUMN TOTAL		168	189	244	16	122	20	27	786
		21.4	24.0	31.0	2.0	15.5	2.5	3.4	100.0

TABLE 82: E.M.S. RESPONSE TIMES AND LEVEL OF RESPONDER

	LEVEL OF RESPONDER	NUMBER OF CASES	MEAN	STANDARD ERROR	T VALUE	DF	2-TAIL PROBABILITY
E.M.S. RESPONSE TIME TO SCENE	B.L.S.	201	4.92	.263	-3.23	876	0.001*
	A.L.S.	677	5.86	.138			
TIME E.M.S. TRANSPORTING UNIT ON SCENE	B.L.S.	194	14.02	.611	-5.72	840	0.000*
	A.L.S.	648	19.35	.476			
E.M.S. TRAVEL TIME TO HOSPITAL	B.L.S.	197	10.55	.600	-1.11	844	.269
	A.L.S.	649	11.23	.285			
TOTAL TIME TO HOSPITAL CARE	B.L.S.	202	28.76	.928	-5.30	871	0.000*
	A.L.S.	671	35.71	.663			

TABLE 83: MEAN DIFFERENCE IN PATIENT TRAUMA SCORE BEFORE AND AFTER B.L.S. OR A.L.S. INTERVENTION:
I. FOR CASES WITH TRAUMA SCORE LESS THAN 16 (N=126), AND
II. FOR CASES WITH TRAUMA SCORE LESS THAN 15 (N=71)

I. ONLY TRAUMA SCORES LESS THAN 16	NUMBER OF CASES	MEAN	(DIFFERENCE) MEAN	STANDARD ERROR	T VALUE	2-TAIL PROBABILITY
Basic Life Support Services						
Trauma Score BEFORE B.L.S. Treatment	27	12.8889	(Insufficient Number Of Cases For Statistical Testing)			
Trauma Score AFTER B.L.S. Treatment		14.1481				
Advanced Life Support Services						
Trauma Score BEFORE A.L.S. Treatment	99	13.1515	0.8283	0.132	6.26	0.000*
Trauma Score AFTER A.L.S. TREATMENT		13.9798				
II. ONLY TRAUMA SCORES LESS THAN 15						
Basic Life Support Services						
Trauma Score BEFORE B.L.S. Treatment	14	10.9286	(Insufficient Number Of Cases For Statistical Testing)			
Trauma Score AFTER B.L.S. Treatment		12.9286				
Advanced Life Support Services						
Trauma Score BEFORE A.L.S. Treatment	57	11.7895	1.0877	0.211	5.15	0.000*
Trauma Score AFTER A.L.S. Treatment		12.8772				

TABLE 84: EFFECT OF LEVEL OF RESPONDER AND TIME ON CHANGE IN PATIENT TRAUMA SCORE CONTROLLING FOR SEVERITY OF INJURY-ANALYSIS OF COVARIANCE MODEL

. E.M.S. RESPONSE TIME

	F	SIGNIFICANCE OF F
MAIN EFFECTS	24.285	0.000*
Responder	0.379	0.685
E.M.S. Response Time	2.921	0.021*
Trauma Score (Covariate)	161.744	0.000*
TWO-WAY INTERACTIONS	0.389	0.909
Responder-Response Time	0.389	0.909
EXPLAINED	12.337	0.000*
Multiple R Squared 0.205		

2. TOTAL TIME TO HOSPITAL CARE

	F	SIGNIFICANCE OF F
MAIN EFFECTS	23.221	0.000*
Responder	0.189	0.828
Total Time To Hospital Care	3.735	0.002*
Trauma Score (Covariate)	172.890	0.000*
TWO-WAY INTERACTIONS	0.774	0.654
Responder-Total Time To Hospital Care	0.774	0.654
EXPLAINED	10.751	0.000*
Multiple R Squared 0.217		

. E.M.S. TRANSPORTING UNIT ON SCENE

	F	SIGNIFICANCE OF F
MAIN EFFECTS	19.326	0.000*
Responder	0.114	0.892
Transporting Unit On Scene	2.915	0.013*
Trauma Score (Covariate)	143.532	0.000*
TWO-WAY INTERACTIONS	0.927	0.507
Responder	0.927	0.507
EXPLAINED	9.104	0.000*
Multiple R Squared 0.192		

TABLE 85: LEVEL OF RESPONDER AND PATIENT OUTCOME AFTER EMERGENCY DEPARTMENT TREATMENT CONTROLLING FOR SEVERITY OF INJURY

Group 1: Trauma Score 0-10

RESPOND	PTCUT: TEMPORARY DISABI (2.)	DEATH (3.)	ROW TOTAL
1. BLS ONLY	0	2	2
	0.0	100.0	12.5
	0.0	14.3	
2. ALS ONLY	1	6	7
	14.3	85.7	43.8
	50.0	42.9	
3. BLS ALS	1	6	7
	14.3	85.7	43.8
	50.0	42.9	
COLUMN TOTAL	2	14	16
	12.5	87.5	100.0

Group 2: Trauma Score 11-13

RESPOND	PTCUT: RESTORE NORMAL (1.)	TEMPORARY DISABI (2.)	DEATH (3.)	ROW TOTAL
1. BLS ONLY	6	6	0	12
	50.0	50.0	0.0	20.7
	50.0	13.6	0.0	
2. ALS ONLY	4	35	2	41
	9.8	85.4	4.9	70.7
	33.3	79.5	100.0	
3. BLS ALS	2	3	0	5
	40.0	60.0	0.0	8.6
	16.7	6.8	0.0	
COLUMN TOTAL	12	44	2	58
	20.7	75.9	3.4	100.0

TABLE 85: LEVEL OF RESPONDER AND PATIENT OUTCOME AFTER EMERGENCY
(Cont'd.) DEPARTMENT TREATMENT CONTROLLING FOR SEVERITY OF INJURY

Group 3: Trauma Score 14-15

RESPOND	PTCUT 1. RESTORE TO NORMAL	2. TEMPORARY DISABI	ROW TOTAL
1. BLS ONLY	8	7	15
	53.3	46.7	16.1
	19.5	13.5	
2. ALS ONLY	27	36	63
	42.9	57.1	67.7
	65.9	69.2	
3. BLS ALS	6	9	15
	40.0	60.0	16.1
	14.6	17.3	
COLUMN TOTAL	41	52	93
	44.1	55.9	100.0

CHI SQUARE = 0.66055 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.7187
CRAMER'S V = 0.08428
CONTINGENCY COEFFICIENT = 0.08398
GAMMA = 0.14857

Group 4: Trauma Score 16

RESPOND	PTCUT 1. RESTORE TO NORMAL	2. TEMPORARY DISABI	ROW TOTAL
1. BLS ONLY	122	45	167
	73.1	26.9	27.5
	27.9	26.6	
2. ALS ONLY	257	105	362
	71.0	29.0	59.6
	58.7	62.1	
3. BLS ALS	59	19	78
	75.6	24.4	12.9
	13.5	11.2	
COLUMN TOTAL	438	169	607
	72.2	27.8	100.0

CHI SQUARE = 0.78165 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.6765
CRAMER'S V = 0.03588
CONTINGENCY COEFFICIENT = 0.03586
GAMMA = -0.00999

NUMBER OF MISSING OBSERVATIONS = 561

TABLE 86: TOTAL NUMBER OF IN-PATIENT DAYS

DAYS	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1.	23	10.5	10.5
2.	31	14.2	24.7
3.	20	9.1	33.8
4.	17	7.8	41.6
5.	20	9.1	50.7
6.	16	7.3	58.0
7.	3	1.4	59.4
8.	12	5.5	64.8
9.	10	4.6	69.4
10.	10	4.6	74.0
11.	3	1.4	75.3
12.	8	3.7	79.0
13.	2	0.9	79.9
14.	6	2.7	82.6
15.	4	1.8	84.5
16.	4	1.8	86.3
17.	3	1.4	87.7
18.	1	0.5	88.1
20.	1	0.5	88.6
22.	2	0.9	89.5
23.	2	0.9	90.4
24.	1	0.5	90.9
26.	2	0.9	91.8
27.	1	0.5	92.2
29.	1	0.5	92.7
30.	2	0.9	93.6
31.	2	0.9	94.5
35.	3	1.4	95.9
38.	1	0.5	96.3
41.	1	0.5	96.8
43.	1	0.5	97.3
51.	1	0.5	97.7
60.	1	0.5	98.2
62.	1	0.5	98.6
63.	2	0.9	99.5
66.	1	0.5	100.0
0.	1116	MISSING	100.0
TOTAL	1335	100.0	

MEAN	9.607	STD ERR	0.805	MEDIAN	5.425
MODE	2.000	STD DEV	11.918	VARIANCE	142.037
KURTOSIS	8.417	SKEWNESS	2.739	RANGE	65.000
MINIMUM	1.000	MAXIMUM	66.000		

VALID CASES 219 MISSING CASES 1116

TABLE 87: TOTAL NUMBER OF IN-PATIENT DAYS IN A CRITICAL CARE UNIT

DAYS	FREQUENCY	PERCENT	CUMULATIVE PERCENT
1.	8	14.8	14.8
2.	11	20.4	35.2
3.	6	11.1	46.3
4.	2	3.7	50.0
5.	5	9.3	59.3
6.	6	11.1	70.4
7.	2	3.7	74.1
8.	4	7.4	81.5
9.	2	3.7	85.2
10.	1	1.9	87.0
11.	2	3.7	90.7
15.	1	1.9	92.6
18.	1	1.9	94.4
21.	1	1.9	96.3
25.	1	1.9	98.1
29.	1	1.9	100.0
0.	1281	MISSING	100.0
TOTAL	1335	100.0	

MEAN	5.944	STD ERR	0.812	MEDIAN	4.500
MODE	2.000	STD DEV	5.963	VARIANCE	35.563
KURTOSIS	5.233	SKEWNESS	2.188	RANGE	28.000
MINIMUM	1.000	MAXIMUM	29.000		

VALID CASES 54 MISSING CASES 1281

TABLE 88: PATIENT STATUS AT DISCHARGE

STATUS		FREQUENCY	PERCENT	CUMULATIVE PERCENT
Alive		214	98.6	98.6
Dead		3	1.4	100.0
		1118	MISSING	100.0
	TOTAL	1335	100.0	

TABLE 89: FINAL DIAGNOSIS OF PATIENTS ADMITTED INTO HOSPITAL

FINAL DIAGNOSIS	FREQUENCY	PERCENT	CUMULATIVE PERCENT
Fx Skull or Cervical Spine	18	8.2	8.2
Fx Ribs or Sternum	10	4.6	12.8
Fx Clavicle or Scapula	17	7.8	20.5
Fx Upper Limb	8	3.7	24.2
Fx Lower Limb	28	12.8	37.0
Dislocated Limb	4	1.8	38.8
Head Concussion or Contusion	40	18.3	57.1
Intracranial Hemorrhage	2	0.9	58.0
Pneumothorax	7	3.2	61.2
Myocardial Contusion	5	2.3	63.5
Intra-Abdominal Injury	18	8.2	71.7
Facial Laceration	24	11.0	82.6
Multiple Trauma	38	17.4	100.0
	1116	MISSING	100.0
TOTAL	1335	100.0	

TABLE 90: PATIENT STATUS AT DISCHARGE AND TOTAL NUMBER OF DAYS IN A CRITICAL CARE UNIT

DIS	CCU	1-2 DAYS (1.)	3-7 DAYS (2.)	OVER 7 DAYS (3.)	ROW TOTAL
ALIVE (1.)	COUNT	18	19	13	50
	ROW PCT	36.0	38.0	26.0	94.3
	COL PCT	94.7	95.0	92.9	
DEAD (2.)	COUNT	1	1	1	3
	ROW PCT	33.3	33.3	33.3	5.7
	COL PCT	5.3	5.0	7.1	
COLUMN TOTAL		19	20	14	53
		35.8	37.7	26.4	100.0

TABLE 91: PATIENT STATUS AT DISCHARGE AND TOTAL NUMBER OF HOSPITAL DAYS

TOTAL

DIS	COUNT / ROW PCT / COL PCT	1-2 DAYS (1.)	3-7 DAYS (2.)	8-14 DAYS (3.)	OVER 14 DAYS (4.)	ROW TOTAL
ALIVE (1.)		52	74	50	38	214
		24.3	34.6	23.4	17.8	98.6
		98.1	98.7	98.0	100.0	
DEAD (2.)		1	1	1	0	3
		33.3	33.3	33.3	0.0	1.4
		1.9	1.3	2.0	0.0	
COLUMN TOTAL		53	75	51	38	217
		24.4	34.6	23.5	17.5	100.0

TABLE 92: NUMBER OF PATIENT DAYS IN A CRITICAL CARE UNIT AND FINAL DIAGNOSIS

CCU	DX	1. FX SKULL CERV SP	2. FX RIBS STERNUM	4. FX CLAV SCAPULA	5. FX UPPER LIMB	6. FX LOWER LIMB	8. CONCUSS, HD CONT	9. INTRACRN HEM	10. PNEUMO THORAX	11. MYOCARD CONT	12. INTRA AB D INJ	ROW TOTAL
1. 1-2 DAYS	COUNT	0	2	1	1	0	4	0	0	2	3	19
	ROW PCT	0.0	10.5	5.3	5.3	0.0	21.1	0.0	0.0	10.5	15.8	35.2
	COL PCT	0.0	66.7	33.3	100.0	0.0	44.4	0.0	0.0	66.7	37.5	
2. 3-7 DAYS	COUNT	4	1	2	0	1	3	1	3	1	1	21
	ROW PCT	19.0	4.8	9.5	0.0	4.8	14.3	4.8	14.3	4.8	4.8	38.9
	COL PCT	66.7	33.3	66.7	0.0	50.0	33.3	100.0	42.9	33.3	12.5	
3. OVER 7 DAYS	COUNT	2	0	0	0	1	2	0	4	0	4	14
	ROW PCT	14.3	0.0	0.0	0.0	7.1	14.3	0.0	28.6	0.0	28.6	25.9
	COL PCT	33.3	0.0	0.0	0.0	50.0	22.2	0.0	57.1	0.0	50.0	
COLUMN TOTAL		6	3	3	1	2	9	1	7	3	8	54
		11.1	5.6	5.6	1.9	3.7	16.7	1.9	13.0	5.6	14.8	100.0

CCU	DX	13. FACIAL LACER	14. MULTIPLE TRAUMA	ROW TOTAL
1. 1-2 DAYS	COUNT	4	2	19
	ROW PCT	21.1	10.5	35.2
	COL PCT	80.0	33.3	
2. 3-7 DAYS	COUNT	1	3	21
	ROW PCT	4.8	14.3	38.9
	COL PCT	20.0	50.0	
3. OVER 7 DAYS	COUNT	0	1	14
	ROW PCT	0.0	7.1	25.9
	COL PCT	0.0	16.7	
COLUMN TOTAL		5	6	54
		9.3	11.1	100.0

TABLE 93: TOTAL NUMBER OF IN-PATIENT DAYS AND FINAL DIAGNOSIS

TOTAL	DX COUNT ROW PCT COL PCT	1. FX SKULL CERV SP	2. FX RIBS STERNUM	4. FX CLAV SCAPULA	5. FX UPPER LIMB	6. FX LOWER LIMB	7. DISLOCAT LIMB	8. CONCUSS, HD CONT	9. INTRACRN HEM	10. PNEUMO THORAX	11. MYOCARD CONT	ROW TOTAL
1-2 DAYS	1.	1	2	2	1	3	0	15	1	0	2	54
		1.9	3.7	3.7	1.9	5.6	0.0	27.8	1.9	0.0	3.7	24.7
		5.6	20.0	11.8	12.5	10.7	0.0	37.5	50.0	0.0	40.0	
3-7 DAYS	2.	9	4	4	3	8	2	16	1	1	0	76
		11.8	5.3	5.3	3.9	10.5	2.6	21.1	1.3	1.3	0.0	34.7
		50.0	40.0	23.5	37.5	28.6	50.0	40.0	50.0	14.3	0.0	
8-14 DAYS	3.	5	3	4	3	11	1	4	0	4	2	51
		9.8	5.9	7.8	5.9	21.6	2.0	7.8	0.0	7.8	3.9	23.3
		27.8	30.0	23.5	37.5	39.3	25.0	10.0	0.0	57.1	40.0	
OVER 14 DAYS	4.	3	1	7	1	6	1	5	0	2	1	38
		7.9	2.6	18.4	2.6	15.8	2.6	13.2	0.0	5.3	2.6	17.4
		16.7	10.0	41.2	12.5	21.4	25.0	12.5	0.0	28.6	20.0	
	COLUMN TOTAL	18 8.2	10 4.6	17 7.8	8 3.7	28 12.8	4 1.8	40 18.3	2 0.9	7 3.2	5 2.3	219 100.0

TOTAL	COUNT ROW PCT COL PCT	12. INTRA AB INJ	13. FACIAL LACER	14. MULTIPLE TRAUMA	ROW TOTAL
1-2 DAYS	1.	5	8	14	54
		9.3	14.8	25.9	24.7
		27.8	33.3	36.8	
3-7 DAYS	2.	1	12	15	76
		1.3	15.8	19.7	34.7
		5.6	50.0	39.5	
8-14 DAYS	3.	4	3	7	51
		7.8	5.9	13.7	23.3
		22.2	12.5	18.4	
OVER 14 DAYS	4.	8	1	2	38
		21.1	2.6	5.3	17.4
		44.4	4.2	5.3	
	COLUMN TOTAL	18 8.2	24 11.0	38 17.4	219 100.0

TABLE 94: TYPE OF E.M.S. RESPONDER AND TOTAL NUMBER OF IN-PATIENT DAYS

TOTAL

RESPOND	COUNT / ROW PCT / COL PCT	1-2 DAYS 1.	3-7 DAYS 2.	8-14 DAYS 3.	OVER 14 DAYS 4.	ROW TOTAL
BLS ONLY	1.	12	16	6	4	38
		31.6	42.1	15.8	10.5	21.3
		27.9	27.1	13.0	13.3	
ALS ONLY	2.	31	43	40	26	140
		22.1	30.7	28.6	18.6	78.7
		72.1	72.9	87.0	86.7	
COLUMN TOTAL		43	59	46	30	178
		24.2	33.1	25.8	16.9	100.0

CHI SQUARE = 5.30887 WITH 3 DEGREES OF FREEDOM SIGNIFICANCE = 0.1505
CRAMER'S V = 0.17270
CONTINGENCY COEFFICIENT = 0.17018
GAMMA = 0.28703

NUMBER OF MISSING OBSERVATIONS = 1157

TABLE 95: TYPE OF E.M.S. RESPONDER AND PATIENT STATUS AT DISCHARGE

RESPOND	DISCHARGE: ALIVE (1.)	DEAD (2.)	ROW TOTAL
1. BLS ONLY	38	0	38
	100.0	0.0	21.6
	21.7	0.0	
2. ALS ONLY	137	1	138
	99.3	0.7	78.4
	78.3	100.0	
COLUMN TOTAL	175	1	176
	99.4	0.6	100.0

TABLE 96: PATIENT ADMISSION STATUS AND STATUS AT DISCHARGE

AD	DIS	1. ALIVE	2. DEAD	ROW TOTAL
1. PT DISCHARGED	COUNT	2	0	2
	ROW PCT	100.0	0.0	0.9
	COL PCT	0.9	0.0	
2. PT ADMITTED GENERAL FLOOR	COUNT	145	0	145
	ROW PCT	100.0	0.0	66.8
	COL PCT	67.8	0.0	
3. PT ADMITTED OR	COUNT	16	0	16
	ROW PCT	100.0	0.0	7.4
	COL PCT	7.5	0.0	
4. PT ADMITTED ICU	COUNT	42	3	45
	ROW PCT	93.3	6.7	20.7
	COL PCT	19.6	100.0	
5. PT ADMITTED TO OTHER	COUNT	9	0	9
	ROW PCT	100.0	0.0	4.1
	COL PCT	4.2	0.0	
COLUMN TOTAL		214	3	217
		98.6	1.4	100.0

TABLE 97: E.M.S. TRAUMA SCORE AND NUMBER OF PATIENT DAYS IN A CRITICAL CARE UNIT

TS	COUNT / ROW PCT / COL PCT	CCU 1-2 DAYS (1.)	3-7 DAYS (2.)	OVER 7 DAYS (3.)	ROW TOTAL
0 THRU 10	1.	0 0.0 0.0	1 50.0 6.3	1 50.0 10.0	2 5.6
11 THRU 13	2.	5 26.3 50.0	8 42.1 50.0	6 31.6 60.0	19 52.8
14 THRU 15	3.	3 37.5 30.0	3 37.5 18.8	2 25.0 20.0	8 22.2
16	4.	2 28.6 20.0	4 57.1 25.0	1 14.3 10.0	7 19.4
	COLUMN TOTAL	10 27.8	16 44.4	10 27.8	36 100.0

TABLE 98: E.M.S. TRAUMA SCORE AND TOTAL NUMBER OF IN-PATIENT DAYS

STS		1-2 DAYS (1.)	3-7 DAYS (2.)	8-14 DAYS (3.)	OVER 14 DAYS (4.)	ROW TOTAL
0 THRU 10	1.	0	1	1	0	2
		0.0	50.0	50.0	0.0	1.4
		0.0	2.0	3.2	0.0	
11 THRU 13	2.	5	3	8	9	25
		20.0	12.0	32.0	36.0	17.0
		12.8	6.1	25.8	32.1	
14 THRU 15	3.	11	8	11	8	38
		28.9	21.1	28.9	21.1	25.9
		28.2	16.3	35.5	28.6	
16	4.	23	37	11	11	82
		28.0	45.1	13.4	13.4	55.8
		59.0	75.5	35.5	39.3	
COLUMN TOTAL		39	49	31	28	147
		26.5	33.3	21.1	19.0	100.0

TOTAL COUNT
ROW PCT
COL PCT

TABLE 99: TYPE OF E.M.S. RESPONDER AND FINAL DIAGNOSIS

RESPOND	COUNT / ROW PCT / COL PCT	DX: FX SKULL CERV SP (1.)	FX RIBS STERNUM (2.)	FX CLAV SCAPULA (4.)	FX UPPER LIMB (5.)	FX LOWER LIMB (6.)	DISLOCAT LIMB (7.)	CONCUSS, HD CONT (8.)	INTRACRN HEM (9.)	PNEUMO THORAX (10.)	MYOCARD CONT (11.)	ROW TOTAL
1. BLS ONLY		4	4	1	3	4	2	6	1	0	1	38
		10.5	10.5	2.6	7.9	10.5	5.3	15.8	2.6	0.0	2.6	21.3
		30.8	40.0	7.7	60.0	17.4	66.7	19.4	50.0	0.0	20.0	
2. ALS ONLY		9	6	12	2	19	1	25	1	7	4	140
		6.4	4.3	8.6	1.4	13.6	0.7	17.9	0.7	5.0	2.9	78.7
		69.2	60.0	92.3	40.0	82.6	33.3	80.6	50.0	100.0	80.0	
COLUMN TOTAL		13	10	13	5	23	3	31	2	7	5	178
		7.3	5.6	7.3	2.8	12.9	1.7	17.4	1.1	3.9	2.8	100.0

RESPOND	COUNT / ROW PCT / COL PCT	DX: INTRA AB INJ (12.)	FACIAL LACER (13.)	MULTIPLE TRAUMA (14.)	ROW TOTAL
1. BLS ONLY		2	1	9	38
		5.3	2.6	23.7	21.3
		13.3	4.8	30.0	
2. ALS ONLY		13	20	21	140
		9.3	14.3	15.0	78.7
		86.7	95.2	70.0	
COLUMN TOTAL		15	21	30	178
		8.4	11.8	16.9	100.0

TABLE 100: E.M.S. TRAUMA SCORE AND FINAL DIAGNOSIS OF ADMITTED PATIENTS

STS	COUNT / ROW PCT / COL PCT	DX 1. FX SKULL CERV SP	2. FX RIBS STERNUM	4. FX CLAV SCAPULA	5. FX UPPER LIMB	6. FX LOWER LIMB	7. DISLOCAT LIMB	8. CONCUSS, HD CONT	9. INTRACRN HEM	10. PNEUMO THORAX	11. MYOCARD CONT	ROW TOTAL
0 THRU 10	1.	0	0	0	0	0	0	0	0	1	0	2
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	1.4
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	
11 THRU 13	2.	2	0	1	1	1	0	4	1	2	0	25
		8.0	0.0	4.0	4.0	4.0	0.0	16.0	4.0	8.0	0.0	17.0
		25.0	0.0	7.1	16.7	5.0	0.0	15.4	50.0	50.0	0.0	
14 THRU 15	3.	3	6	5	0	4	1	5	0	0	3	38
		7.9	15.8	13.2	0.0	10.5	2.6	13.2	0.0	0.0	7.9	25.9
		37.5	60.0	35.7	0.0	20.0	50.0	19.2	0.0	0.0	75.0	
16	4.	3	4	8	5	15	1	17	1	1	1	82
		3.7	4.9	9.8	6.1	18.3	1.2	20.7	1.2	1.2	1.2	55.8
		37.5	40.0	57.1	83.3	75.0	50.0	65.4	50.0	25.0	25.0	
COLUMN TOTAL		8	10	14	6	20	2	26	2	4	4	147
		5.4	6.8	9.5	4.1	13.6	1.4	17.7	1.4	2.7	2.7	100.0

STS	COUNT / ROW PCT / COL PCT	DX 12. INTRA AB ID INJ	13. FACIAL LACER	14. MULTIPLE TRAUMA	ROW TOTAL
0 THRU 10	1.	0	0	1	2
		0.0	0.0	50.0	1.4
		0.0	0.0	4.3	
11 THRU 13	2.	7	2	4	25
		28.0	8.0	16.0	17.0
		50.0	14.3	17.4	
14 THRU 15	3.	4	1	6	38
		10.5	2.6	15.8	25.9
		28.6	7.1	26.1	
16	4.	3	11	12	82
		3.7	13.4	14.6	55.8
		21.4	78.6	52.2	
COLUMN TOTAL		14	14	23	147
		9.5	9.5	15.6	100.0

TABLE 101: E.M.S. RESPONSE TIME AND TOTAL NUMBER OF IN-PATIENT DAYS

E.M.S. RESPONSE TIME		TOTAL DAYS 1-2 DAYS (1.)	3-7 DAYS (2.)	8-14 DAYS (3.)	OVER 14 DAYS (4.)	ROW TOTAL
FT	COUNT					
	ROW PCT					
	COL PCT					
0 THRU 3 MIN	1.	14	21	6	3	44
		31.8	47.7	13.6	6.8	24.6
		30.4	33.9	15.0	9.7	
4 THRU 5 MIN	2.	11	15	12	7	45
		24.4	33.3	26.7	15.6	25.1
		23.9	24.2	30.0	22.6	
6 THRU 9 MIN	3.	13	21	17	16	67
		19.4	31.3	25.4	23.9	37.4
		28.3	33.9	42.5	51.6	
10 THRU 30 MIN	4.	8	5	5	5	23
		34.8	21.7	21.7	21.7	12.8
		17.4	8.1	12.5	16.1	
COLUMN TOTAL		46	62	40	31	179
		25.7	34.6	22.3	17.3	100.0

1 OUT OF 16 (6.3%) OF THE VALID CELLS HAVE EXPECTED CELL FREQUENCY LESS THAN 5.0.
MINIMUM EXPECTED CELL FREQUENCY = 3.983
CHI SQUARE = 12.90950 WITH 9 DEGREES OF FREEDOM SIGNIFICANCE = 0.1667
CRAMER'S V = 0.15505
CONTINGENCY COEFFICIENT = 0.25936
GAMMA = 0.18621

NUMBER OF MISSING OBSERVATIONS = 1156

TABLE 102: PERCENTAGE OF DOCUMENTATION ON E.M.S. REPORTING FORMS
MARCH 1, 1981 THROUGH JUNE 30, 1981
MOTOR VEHICLE TRAUMA CASES ONLY

VARIABLE	PERCENTAGE	# COMPLETED/TOTAL #	
Patient Age	99	1318/1335	
Patient Sex	100	1332/1335	
Seat Belt	80	864/1076	(Cars & Trucks Only)
Type Victim	96	1285/1335	
First Responder	9	124/1335	(No specific space on form for inclusion)
Priority Rating	89	851/ 954	(A.L.S. alone and A.L.S. & B.L.S.)
Training Level	91	1220/1335	
B.L.S. Treatments		286 treatments for 440 B.L.S. cases	
A.L.S. Treatments		781 treatments for 954 A.L.S. cases	
UHF Radio	83	1115/1335	
Telephone	83	1102/1335	
HEAR	79	1055/1335	
Communication Problems	74	707/ 954	
E.M.S. Trauma Score	64	783/1220	
B.L.S.	75	200/266	
A.L.S.	61	476/780	
Emergency Department Trauma Score	92	1115/1211	

Note: Response times are not included because the missing times were collected retroactively by an Oakland County staff member from the dispatchers. Consequently, the percentage of response times collected (80%) were larger than the percentage actually documented on the run sheets. Less than 50% of the run sheets had complete times.

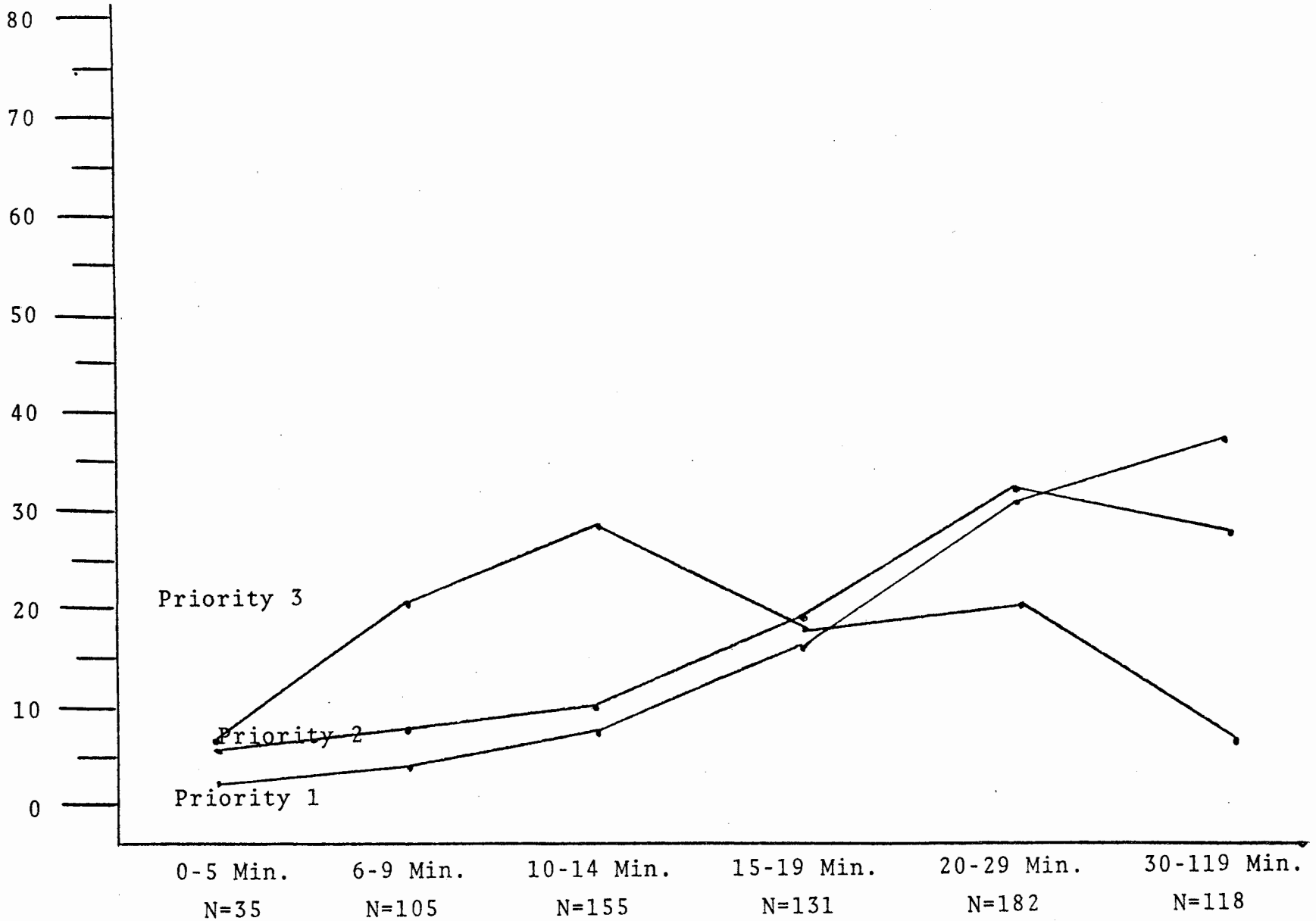

Figure 1: AMOUNT OF TIME E.M.S. TRANSPORTING UNIT ON SCENE AND PRIORITY LEVEL OF PATIENT TREATED

($p < .01$)

OAKLAND COUNTY
EMERGENCY MEDICAL SERVICES REPORTING FORM

INCIDENT DATA BASE

Responding Unit _____ Incident No. _____ Date _____
Location Type _____ Complaint Received _____
Incident/Location Address _____
Time Dispatched (On Route) _____ Time Unit Arrived on Scene _____
Patient Name _____ Age _____ Sex _____ Wgt. _____
Patient Address _____ Phone Number _____
A-EMT's (Names) _____ B-EMT's (Names) _____
If auto trauma, were seat belts used? Yes ___ No ___ First Responder Intervention:
First Aid? Yes ___ No ___ Citizen CPR? Yes ___ No ___ Public Safety CPR? Yes ___ No ___
Motor Vehicle Accident? Yes ___ No ___ Cardiac Arrest? Yes ___ No ___
Primary Complaint, Mechanism of Injury, Findings, etc: _____

BASIC LIFE SUPPORT DATA

Time					
Level of Consciousness					
Blood Pressure					
Pulse Rate					
Respiration Rate					
Pupils					
Skin Condition					
Breath Sounds					

Pertinent Medical History _____
Current Medications _____
Medication Allergies _____
Impression _____
Treatment _____
Hospital contacted by HEAR system? Yes ___ No ___

ADVANCED LIFE SUPPORT PROCEDURES

Medication Ordered	Dose/Route	Site/Time	A-EMT	Medication Ordered	Dose/Route	Site/Time	A-EMT

Airway Procedure: _____ EOA? Yes ___ No ___ ET? Yes ___ No ___ 02 Mask & Flow _____
Defibrillation: Time/Watt Secs. _____; _____; _____
Hospital Communications: Radio Channel _____ Telephone _____ EKG _____
EKG Interpretation _____
Communication Problems _____ SOP Used _____
Hospital Contacted _____ Physician & R.N. _____ Priority (indicate 1, 2, or 3) _____
In your opinion, would a Basic Unit have been sufficient: Yes No (circle one) A-EMT Signature _____
Remarks, Notes, Other Treatment: _____

TRANSPORTATION DATA

Hospital Requested by Patient _____ Hospital Transported to _____
Ambulance Transporting (Unit Identification Number) _____
Time Leaving Scene _____ Time Arrived at Hospital _____
Paramedic Accompanied Patient? Yes _____ No _____
Was there a change in priority during the incident? Yes _____ No _____ Indicate the change _____

I, _____, refused transportation to appropriate hospital/treatment.
Witnessed by: _____

Comments _____

APPENDIX II

TRAUMA INDEX USED BY PRE-HOSPITAL AND EMERGENCY DEPARTMENT PERSONNEL (Developed by Sacco, W.J., Champion, H.R. and Carnazzo, A).

Trauma score	Value	Points	Score
A. Respiratory rate	10–24	4	
Number of respirations in 15 sec, multiply by four	25–35	3	
	>35	2	
	<10	1	
	0	0	A._____
B. Respiratory effort			
Shallow—markedly decreased chest movement or air exchange	Normal	1	
Retractive—use of accessory muscles or intercostal retraction	Shallow, or retractive	0	B._____
C. Systolic blood pressure	>90	4	
Systolic cuff pressure—either arm-auscultate or palpate	70–90	3	
	50–69	2	
	<50	1	
No carotid pulse	0	0	C. _____
D. Capillary refill			
Normal—forehead, lip mucosa or nail bed color refill in 2 sec	Normal	2	
Delayed—more than 2 sec of capillary refill	Delayed	1	
None—no capillary refill	None	0	D.

E. Glasgow coma scale

1. Eye opening
   - Spontaneous _____4
   - To Voice _____3
   - To Pain _____2
   - None _____1

2. Verbal response
   - Oriented _____5
   - Confused _____4
   - Inappropriate words _____3
   - Incomprehensible words _____2
   - None _____1

3. Motor response
   - Obeys commands _____6
   - Purposeful movement (pain) _____5
   - Withdraw (pain) _____4
   - Flexion (pain) _____3
   - Extension (pain) _____2
   - None _____1

Total GCS Points	Score
14–15	5
11–13	4
8–10	3
5–7	2
3–4	1

E. _____

Total GCS point (1+2+3)_____

Trauma score
(Total points A+B+C+D+E)