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# Age and Sex of Motor Vehicle Fatality Victims

Lillian C. Schwenk
*Iowa State College*

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By Lillian C. Schwenk

## Problem

Motor vehicle accident statistics are being compiled in practically every state and are often reported in various elementary forms. The absolute number of cases is frequently given either as fatalities or as reported accidents without elaboration as to how they occur, whether drivers, pedestrians, or other details. In order to attack the accident problem effectively it is necessary to have more specific facts, if possible to obtain them.

During the last two or three years there has been a decided increase in the number of persons killed in automobile accidents in Iowa. Last year there were 606 fatalities reported due to motor vehicles. There were 12,779 other persons seriously injured. This means that for every person killed there were 21 persons injured. The economic loss was $28,924,024 resulting from a total of around 50,000 accidents. Such loss of life and limb, of money, material, and time must be reduced in the interest of our national welfare.

As stated, it is ordinarily not customary to make any detailed analysis of the age of the fatality victims or of persons injured in automobile accidents. For the year 1954 an analysis was made of the fatal-accident victims with respect to age and sex only. The study was reported by a member of the Driving Research Laboratory staff (4) last year. It showed a preponderance of fatalities at the lower age levels but no distinction was made in the tabulation between drivers, passengers, and pedestrians.

To develop a system for improving methods of analysis of accident data, the following study was designed. It was decided to make the tabulation of fatality victims for 1955 by age and sex and also by classification as to whether the person was a driver, passenger, or pedestrian.

It was thought advisable to test the null hypothesis that there is no difference between the distribution of ages of fatality victims and the distribution of ages of persons throughout the range of the population. The test of goodness of fit was made only for passengers and pedestrians since a suitable hypothesis on frequency of the age of drivers at different age levels was not available.

*Part of a five-year project on driving research sponsored by the Allstate Insurance Company at Iowa State College.

## Method and Procedure

The raw data were obtained from the State Department of Public Safety of Iowa for the year 1955 and were plotted with respect to the age and sex of the fatality victims as well as their activities at the time they were killed. Of the 606 people reported by the State Department of Public Safety as fatality victims, the following table summarizes results:

**Table 1**

| | Drivers | Passengers | Pedestrians |
|---|---|---|---|
| Male | 285 | 114 | 36 |
| Female | 32 | 119 | 20 |

This shows the first analysis of the data as tabulated. The next procedure was to compute the mean ages of each group and to test certain significanes of difference found. The distribution of the total population was then calculated as an hypothesis. Calculations were made from a standard reference (2). The chi-square test was made for passengers and pedestrians to determine the goodness of fit. Edward's statistical model (1) was used as a basis of calculation of chi square in this study.

## Results

The distribution of persons by age and sex given in Table 2 quite well shows the nature of these various distributions.

In order to determine the significance of any difference noted in age, critical ratios were calculated between the mean ages of the respective groups. These are given in Table 3. Only the difference between male drivers and passengers was found significant. From this table it is clear that the average age of victims is at the prime of life. In addition, the chi-square tests were made to determine whether or not the distributions of fatality frequencies fit that of the distribution of ages of persons in the population with respect to passengers and pedestrians. These values were all significant beyond the one per cent level, except that for female pedestrians which was significant only at about the 20 per cent level. For three groups, then, the hypothesis of no difference between distributions is rejected. An examination of the index of skewness indicates a tendency to cluster at the lower age levels.

## Discussion

From the results obtained, the following points may be restated. The fact that there is a predominant number of males killed and that these tend to cluster at the lower age levels would tend to warrant special consideration. Siebrecht reported similar findings in 1950 and 1953 (7). The age of maximum fatal accident in-

**Table 2**

Analysis and Comparison by Population Groups

(On basis of 1955 census estimates)

| | Male | | | | Female | | | |
|---|---|---|---|---|---|---|---|---|
| | Per cent of Population in Group | Drivers | Passengers | Pedestrians | Per cent of Population in Group | Drivers | Passengers | Pedestrians |
| 0-4 incl. | .1124 | 0 | 10 | 7 | .1069 | 0 | 13 | 2 |
| 5-14 incl. | .1847 | 1 | 14 | 12 | .1753 | 0 | 9 | 8 |
| 15-19 incl. | .0696 | 37 | 17 | 9 | .0666 | 1 | 18 | 1 |
| 20-24 incl. | .0680 | 51 | 13 | 0 | .0662 | 4 | 10 | 1 |
| 25-29 incl. | .0727 | 29 | 7 | 0 | .0738 | 5 | 10 | 0 |
| 30-34 incl. | .0750 | 17 | 5 | 1 | .0770 | 3 | 6 | 0 |
| 35-39 incl. | .0699 | 28 | 9 | 0 | .0717 | 2 | 4 | 0 |
| 40-44 incl. | .0675 | 25 | 5 | 0 | .0690 | 4 | 8 | 0 |
| 45-49 incl. | .0607 | 13 | 4 | 0 | .0610 | 2 | 2 | 1 |
| 50-54 incl. | .0532 | 15 | 6 | 0 | .0537 | 1 | 3 | 1 |
| 55-59 incl. | .0471 | 17 | 4 | 2 | .0482 | 4 | 8 | 0 |
| 60-64 incl. | .0399 | 14 | 6 | 3 | .0411 | 3 | 5 | 1 |
| 65-69 incl. | .0316 | 16 | 6 | 1 | .0331 | 0 | 10 | 2 |
| 70-74 incl. | .0229 | 11 | 2 | 4 | .0260 | 3 | 10 | 2 |
| 75-79 incl. | .0137 | 8 | 3 | 0 | .0162 | 0 | 1 | 1 |
| 80-84 incl. | .0071 | 3 | 2 | 4 | .0088 | 0 | 1 | 0 |
| 85 & over | .0039 | 0 | 1 | 2 | .0055 | 0 | 1 | 0 |
| Totals | | 285 | 114 | 36 | | 32 | 119 | 20 |
| Mean age | | 39.1 | 33.0 | 36.0 | | 42.6 | 35.6 | 30.8 |
| Median age | | 37 | 26.0 | 11.5 | | 42.0 | 29 | 13.5 |
| Range age | | 14-83 | 0-86 | 2-87 | | 16-73 | 0-85 | 3-78 |
| S.D. | | 18.3 | 22.2 | 33.3 | | 16.5 | 23.8 | 28.1 |
| Skewness Index* | | .344 | .946 | 2.207 | | .109 | .832 | 1.847 |

*All tended to cluster in the direction of the lower age range. Size of the index reflects the tendency noted.

**Table 3**

Evaluation of Differences in Age of Fatal Accident Victims

| Victim | Sex | Mean Age | Victim | Sex | Mean Age | Difference | C.R. |
|---|---|---|---|---|---|---|---|
| 1. Driver | M | 39.1 | Passenger | M | 33.0 | 6.1 | 2.60 |
| 2. Driver | M | 39.1 | Pedestrian | M | 36.0 | 3.1 | 0.54 |
| 3. Passenger | M | 33.0 | Pedestrian | M | 36.0 | 3.0 | 0.50 |
| 4. Driver | F | 42.6 | Passenger | F | 35.6 | 7.0 | 1.93 |
| 5. Driver | F | 42.6 | Pedestrian | F | 30.8 | 11.8 | 1.71 |
| 6. Passenger | F | 35.6 | Pedestrian | F | 30.8 | 4.8 | 0.72 |
| 7. Driver | M | 39.1 | Driver | F | 42.6 | 3.5 | 1.17 |
| 8. Passenger | M | 33.0 | Passenger | F | 35.6 | 2.6 | 0.84 |
| 9. Pedestrian | M | 36.0 | Pedestrian | F | 30.8 | 5.2 | 0.62 |

volvement for men drivers is 21. These results are in agreement with those reported by Lauer (5 & 6).

As far as passenger fatality victims are concerned, it seems that they are about equally divided between male and female as would be expected. Of the three groups considered, passengers probably have the least control over their fate. A chi-square test of differences noted between sex frequency of passenger victims at various age levels does not show significance.

For pedestrians, the chi-square test does approach significance and there is some basis for speculation as to whether or not younger boys seem to get into more trouble through their various activities than might be expected by chance. It would be desirable to make more detailed analysis of how, when and where younger boys and girls are injured. Further, to determine what they are doing at the time. Perhaps accident-reporting forms can be developed which will describe more in detail the nature of the fatalities. The information would be useful in education for accident prevention. In turn it would be very valuable in safety education work generally and perhaps would aid materially in reducing pedestrian fatalities.

## Summary and Conclusions

An analysis of fatal motor-vehicle accident victims in Iowa for the year 1955 thus indicates:

1. The mean age of victims is in the prime of life.

2. That deaths do not always come as expected by chance according to numbers in the population group by age.

3. Male or female passengers are equally likely to be killed in an accident, especially at the younger and the older ages.

4. Female driver fatality victims were somewhat older than male driver fatality victims.

5. There seems to be a greater tendency for males at the younger age to be killed than for females, both as drivers and as pedestrians. Perhaps, as previously suggested, this may be due to the masculine characteristic of aggressiveness.

Suggested preventive measures would involve educating or re-educating drivers to develop better attitudes, greater knowledge of driving skills and hazards, and better understanding of the laws. Apparently there is also need for more emphasis on pedestrian education.

### References

1. Edwards, Allen L., Statistical Analysis. New York: Rinehart and Co., 1951, p. 250.
2. Gallup, George, 1956 Book of Facts. Audience Research Inc., Princeton, N. J., Vol. 83.
3. Iowa Department of Public Safety, Motor Vehicle Traffic Fatalities for January through December, 1955. Des Moines, Iowa.

4. Lauer, A. R., The relation of fatal motor vehicle accidents and automobile accident involvement of all kinds. (ms), 1955, Driving Research Laboratory.
5. Lauer, A. R., Age and sex in relation to accidents. Bull. #60, Highway Research Board, Washington, D. C., 1952.
6. Lauer, A. R., Characteristics of the driving population with respect to age, sex, driving habits and accident involvement. Iowa Academy of Science, *61,* 1954.
7. Siebrecht, Elmer, A preliminary report of accident characteristics of Iowa drivers. Iowa Academy of Science, *60,* 1953.

DRIVING RESEARCH LABORATORY
IOWA STATE COLLEGE
AMES, IOWA