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## A Preliminary Report of Accident Characteristics of Iowa Drivers

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## **A Preliminary Report of Accident Characteristics of Iowa Drivers**

By ELMER B. SIEBRECHT

By implication this is a progress report of a study of the driving population of the State of Iowa. The problem is the identification of driving and accident characteristics of motor vehicle operators with reference to such factors as age, sex, mileage driven, and time of day when most driving is done.

The need for such a study becomes apparent when one notes the lack of information regarding the driving and accident patterns of motor vehicle operators at the various ages, and when one observes the current practice of generalizing from group data regarding accident involvement of specific age groups as well as the rather uniform practice of referring to youthful and teen-age drivers as the troublesome groups.

To be sure, the National Safety Council reports a high rate of involvement for youthful groups. But a breakdown of accidents according to age levels is impossible because of the current practice of grouping the entire driving population whose ages range from 15 to 65 years and over, into four categories: 15-24 years, 25-44 years, 45-64 years, and 65 years and over. The analysis is further complicated by the lack of information regarding the mileage driven by the respective age-level drivers.

Lately the Connecticut Department of Motor-Vehicles has reported on the relation of safe driving to age, and Moran and Collins report on the relation of frequency of accidents to age. But as yet there is not available sufficient information regarding the relationship of driving record to such factors as age, sex, mileage driven, and time of day when most driving is being done. It is the purpose of the Iowa study to provide such information. This report covers but a segment of the overall problem.

### **METHODS AND PROCEDURES**

The five-year study of the driving population of Iowa involved the drawing of two representative samples from the files of the driver's License Bureau of the Department of Public Safety, Des Moines, one for 1950 and the other for 1953. To secure the approximate 7,500 cases needed in each sample, a divider-selector was devised by empirical count of some 20 samples of license cards and/or jackets taken throughout the files. A divider-selector of 3.01-

inch spread between the end prongs made possible the selection of every 200th card for the 1950 Sample and one of 4.09-inch spread made possible the selection of every 250th card or jacket for the 1953 Sample.

From the license card or jacket were copied on specially prepared blanks such data as sex, age, name, birthday, height and weight, occupation, and number and year of accidents and violations. The blanks were numbered serially and as found in the alphabetical files. Through the use of a double postal card, supplementary information was obtained from the drivers comprising the samples regarding such factors as: the way they learned to drive, mileage driven daily, nightly, and annually, marital status and education level. The information was coded and recorded on IBM cards for processing and analysing.

#### AGES WHEN MALE DRIVER HAVE ACCIDENTS

Specifically, this report concerns the ages when male drivers of Iowa have accidents. For the two samples of 7,500 cases each a total of 4,300 accidents was recorded, 1,743 for the 1950 Sample and 2557 for the 1953 Sample. The latter includes three years and 46 per cent more accidents than the earlier sample. An AGE-ACCIDENT DATE slide rule was devised to compute the age of the driver at the time of his accidents. The recorded accidents were then analyzed to show three sets of accident-age relationships: (1) for the total number of accidents of the two samples, (2) for the comparable years, 1947-49 and Before, of the two samples, and (3) for the years 1947-49 and Before and 1950-52 of the 1953 Sample. These relationships are shown in Figures 1, 2, and 3, respectively.

*Accident-Age Relationship for Two Samples.* Figure 1 shows the per cent of accidents experienced by drivers at each of the given ages. The solid line (————) identifies the distribution of the 1953 Sample and the broken line (— . — . — .) that of the 1950 Sample. The number of accidents recorded for each was 2557 and 1743, respectively.

The dominant characteristic of the two distributions is the general coincidence throughout, with the heavy concentration of accidents during the youthful years and the gradual decline of involvement after age 30 to the 85th year. Certain irregularities occur at ages 21, 24, 32, etc., the implications of which are at present not clear. However, the consistency of the characteristics from year to year and sample to sample denote evidence of certain undisclosed factors.

Certain other characteristics should be noted with respect to the

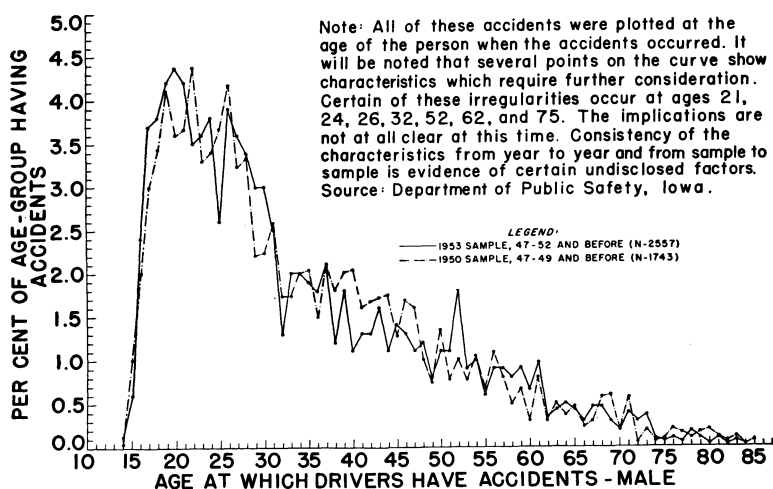


Figure 1. Accident-Age Relationship for Male Drivers of Two Samples: 1947-49 and Before and 1950-52 and Before.

distributions. First, the ages of greatest accident involvement are 22 and 20 for the 1950 and 1953 samples, respectively. During these years practically the identical number of accidents occurred, 4.4 per cent for the former and 4.3 for the latter.

Second, the age range of maximum number of accidents is from 17 to 31 years during which time 50.9 and 53.3 per cent of all accidents occurred for the accident-involved drivers of the two samples. In other words, these drivers experience more than half of their accidents during these 14 years of their driving experience, and the rest during the remaining years of the 71-year driving span. The age span of driving is from 14 to 85 years.

*Accident-Age Relationship for Comparable Years of Two Samples.* Figure 2 shows the relationship of age to accidents for the comparable years of the two samples, namely, 1947-49 and Before. The total number of accidents recorded was 2,955, or 1,743 for the 1950 Sample and 1212 for the 1953 Sample.

Immediately apparent is the general similarity between the distributions of Figure 1 and Figure 2, with the heavy concentration of accidents in the youthful years and the marked decline through the 85th year, and irregularities at certain ages.

Again one notes the general coincidence of the two distributions of Figure 2, the dash-dot (— . — . — .) line identifying the comparable years of the 1950 Sample and the broken (— — — —) line those of the 1953 Sample. The peak ages of accident involvement are 22 and 20, when 4.4 and 5.0 per cent of the accidents

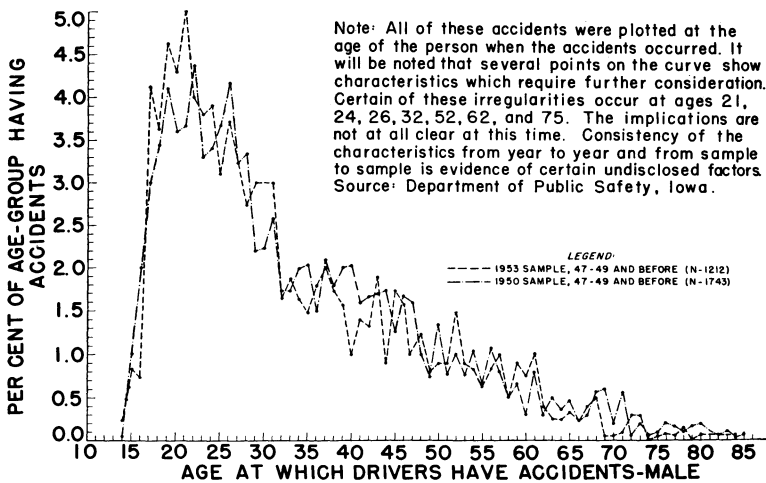


Figure 2. Accident-Age Relationship, Comparable Years of Two Samples.

occur. The reason for the greater percentage of involvement for the 1953 Sample has not yet been ascertained.

When age range of maximum accidents is considered, one notes again that male drivers experience more than half their accidents during the 14 years between ages 17 and 31, with 51.6 and 50.9 per cent of all accidents occurring then for the 1953 and 1950 samples, respectively.

*Accident-Age Relationship for Segments of the 1953 Sample.* Thus far the accident data gathered in the two samples of the driving population of Iowa have been analyzed to show the relationship of accidents to the ages of drivers in two respects: first, for the two samples as a whole and, second, for the comparable years, 1947-49 and Before, of the two samples. The accidents recorded in the 1953 Sample were furthered analyzed to show the accident-age relationship for two years-segments, 1947-49 and Before and 1950-52. Figure 3 shows this relationship. The broken (— — —) line identifying the first segment, the dotted (. . . .) line the second segment. A total of 2557 accidents was recorded, 1,212 for the first period and 1345 for the second.

As in the previous distribution, so here one notes the general coincidence of the two distributions, with the characteristic concentration during the youthful years and the decline in accidents as age increases as well as the irregularities at certain ages.

The ages of maximum accident involvement are for the first and second periods, respectively, 21 and 20 years, with 5.0 and 4.4 per cent of the accidents occurring during these ages.

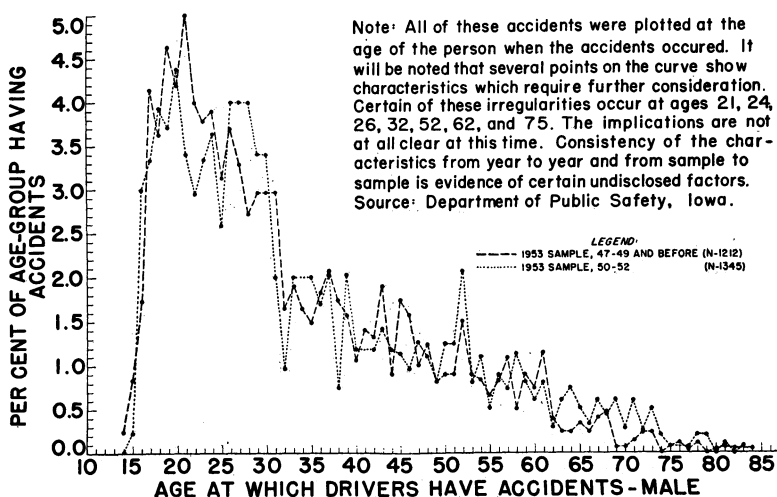


Figure 3. Accident-Age Relationship for Segments of 1953 Sample.

The age range of maximum accident involvement is from 17 to 31 years for both distributions, with a greater concentration of accidents during these ages in the second period, or for the years 1950-52. During these years 55.2 per cent of the total accidents occurred as compared with 51.6 per cent for the first period, or the years 1947-49 and before. The reason for this variation is not at present known.

### SUMMARY

It has been noted that for some time now youthful drivers, and teen-agers especially, are regarded as the worst drivers of motor vehicles. Scientific verification of this is presently difficult because of the practice of recording accidents in such a way as to preclude analysis with respect to such factors as age, sex, mileage driven, and time of day when most driving is done. The Iowa study purports to study such relationships over a five-year period. Within the limits of this study, however, it can be said:

- 1) The extent of accident involvement of the male driver is in inverse relation to the age of the driver. The accident pattern rises sharply from age 15 through age 22, after which a gradual decline occurs through age 31 followed by a more marked decline through age 85.
- 2) The peak of accidents occurs at ages 20, 21, and 22 during which years male drivers have about twice as many accidents for the number of drivers as that from ages 30 to 40 and nearly four times that of ages 40-50.
- 3) Male drivers incur more than 50 per cent of their accidents by their 31st birthday, specifically during the 14 year span from ages 17 to 31.
- 4) Certain irregularities occur with such consistency at certain ages

from sample to sample and year to year as to indicate the presence of certain undisclosed factors; these must be given further consideration.

It may therefore be concluded that on the basis of accident involvement alone, youthful drivers display the more undesirable driving behavior. However, accident involvement is not the sole criterion of a good or bad driving record. Until accidents are studied in relation to other pertinent factors in the driving pattern, one cannot regard either the youthful or the older drivers as "the worst drivers."

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