

1958

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C. O. Swanson
Iowa State College

A. R. Lauer
Iowa State College

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Recommended Citation

Swanson, C. O. and Lauer, A. R. (1958) "Relative Changes in Percentages of Iowa Driver Licensees and Traffic Involvement By Age Groups Between 1953 and 1958," *Proceedings of the Iowa Academy of Science*, 65(1), 427-431.

Available at: <https://scholarworks.uni.edu/pias/vol65/iss1/65>

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Relative Changes in Percentages of Iowa Driver Licensees and Traffic Involvement By Age Groups Between 1953 and 1958

By C. O. SWANSON and A. R. LAUER

INTRODUCTION

With greater responsibility being placed upon the individual driver licensees for motor vehicle accident prevention it would appear that a logical approach to the problem would be through a study of licensee representation and traffic involvement. If some age groups are contributing more than their share of accidents, is this due to greater numbers in the group? Will the ratios remain static or will the percentages of licensees change with the passing of time?

Such evaluation is of interest in Iowa because of the adoption of an administrative point system. The relative seriousness of violations incurred by the individual driver and whether or not an accident results from a given type of violation is being studied.

Iowa has approximately 1,500,000 persons licensed to drive at the present time. At one end of the distribution there is the group of drivers whose records are unblemished by accidents and/or violations. At the other end the accident and violation involved persons constitute a troublesome group.

Over a given period of time a certain proportion of drivers will likely have accidents or violations. The longer the period the higher the records this percentage will have. For a five-year period in Iowa it will usually be found that about 30 per cent of male drivers have been involved in an accident and/or violation. When all drivers are considered this drops to slightly over 22 per cent because of better records made by women.

Breakdown of the factors of accident involvement resolves itself into the physical and mental aspects as they involve the individual, or social, and cultural aspects within groups. No attempt is made to identify individuals as being violation or accident repeaters in this paper, nor to designate specific causes of accidents. Each age group will be considered only to the extent to which the group size remains constant and the degree to which the frequency of traffic involvement remains the same among certain groups over the period from 1953 to 1958.

Birth rate as well as other factors are given as the reason for some

changes in numbers of licensees noted. Conditions of various types, such as the depression in the 1930's are known to affect the birth rate. These age groups now show the greatest variation in numbers. It would be expected that this might affect the numbers in an age group and consequently the number of traffic involvement cases.

Sociologists report also that citizens of this age group are leaving the state at a higher rate than others. The purpose of the present study was to test the hypothesis of uniformity of change in age of licensee groups without reference to reasons and to note whether such changes, if any, would affect the accident and violation records of licensed drivers at these age levels.

METHOD AND PROCEDURE

Since the mass of data on driver accidents and violations in the state files is too great to be handled in its entirety, a system of random sampling was used to secure representative cases of the licensee population and their violation and accident records. The individual cases were drawn from the files by a table of random numbers.

It was begun by selecting a starting point in a row of cabinets. The cabinets were numbered and in like manner files were selected. From a given point within the cabinet a sample consisting of 150 driver licensee records was drawn. Thus 100 samples were drawn consisting of 150 driver licensees each making up the population of

Table 1
 Percentages of Male and Female Licensees in Iowa for 1953 and 1958
 Increases or Decreases By Five-Year Age Groups

Age Groups (Years)	1953		1958		Increase or Decrease from 1953	
	% Male Licensees (2)	% Female Licensees (3)	% Male Licensees (4)	% Female Licensees (5)	Male (6)	Female (7)
15-19	7.549	7.794	7.684	7.712	+0.135	-0.082
20-24	11.627	12.794	9.401	12.119	-2.226	-0.675
25-29	13.031	13.970	10.028	11.644	-3.003	-2.326
30-34	12.901	11.863	10.392	12.441	-2.509	+0.578
35-39	9.801	12.353	9.313	12.508	-0.488	+0.155
40-44	8.268	10.580	9.864	10.492	+1.596	-0.088
45-49	8.177	9.854	9.280	9.119	+1.103	-0.735
50-54	6.847	7.401	8.495	7.729	+1.648	+0.328
55-59	6.423	5.636	7.089	6.881	+0.666	+1.245
60-64	5.462	3.185	6.319	4.051	+0.857	+0.866
65-69	4.559	2.401	5.196	3.254	+0.637	+0.853
70-74	2.547	1.274	4.018	1.424	+1.471	+0.150
75-79	1.938	0.637	2.092	0.525	+0.154	-0.112
80-84	0.793	0.490	0.583	0.085	-0.210	-0.405
85+	0.347	0.000	0.242	0.002	-0.105	+0.002
Totals	100.270	100.232	99.996	99.986	-0.274	-0.246

Percentages given in columns (6) and (7) are the algebraic differences of the values given column (2) (4) and (4) (5), respectively. The total plus and minus values in columns (6) and (7) are equal to the differences between totals of columns (2) (4) and (3) (5).

Table 2

Percentages of All Licensees in Iowa in 1953 and 1958 With Indicated Increases or Decreases By Five-Year Age Groups

Age Group (Years)	1953 % of all Licensees (1)	1958 % of all Licensees (3)	Increase or Decrease from 1953 (4)
15-19	7.133	7.695	+0.562
20-24	11.893	10.471	-1.422
25-29	13.292	10.665	-2.627
30-34	12.617	11.199	-1.418
35-39	10.499	10.571	+0.072
40-44	8.903	10.111	+1.208
45-49	8.422	9.217	+0.795
50-54	6.999	8.195	+1.196
55-59	6.209	7.007	+0.798
60-64	4.841	5.426	+0.585
65-69	3.969	4.431	+0.462
70-74	2.198	2.997	+0.799
75-79	1.569	1.475	-0.094
80-84	0.656	0.387	-0.269
85+	0.252	0.154	-0.098
Totals	99.452	100.000	+0.548

Percentages given in column (4) are the algebraic differences of the values of column (3), 1958 distributions, contrasted to column (2), 1953 distributions. The total plus value in column (4) is equal to the difference between totals of column (2) and (3).

Table 3

Comparison of Driver Licensees With Violations and/or Accidents by Five-Year Age Groups in Iowa

N = 14,984 (1958 Sample)

Age Groups (years)	% All Licensees* (Z ₂) (2)	% All Accidents & Violations* (Z ₁) (3)	% Excess or Deficiency at Age Level (Z ₁ -Z ₂) (4)
15-19	7.69487	6.92446	-0.77041
20-24	10.47117	14.95803	+4.48686
25-29	10.66471	13.72902	+3.06431
30-34	11.19861	12.73980	+1.54120
35-39	10.57128	9.71223	-0.85905
40-44	10.11078	9.74221	-0.36857
45-49	9.21650	8.00360	-0.21290
50-54	8.19541	6.95443	-1.24096
55-59	7.00747	5.12590	-1.88157
60-64	5.42579	4.49640	-0.92939
65-69	4.43139	3.23741	-1.19398
70-74	2.99653	2.24820	-0.74833
75-79	1.47491	1.55875	+0.08384
80-84	0.38708	0.38969	+0.00261
85+	0.15350	0.17986	+0.02636
Totals	100.00000	100.00000	00.00000

Violations and accidents are within the past five-year period.
*Composite of the total for both sexes.

14,984 cases used in this analysis as given in Tables 1, 2 and 3 after slight shrinkage.

In grouping data from the cards drawn, tabulations were made by

five-year age groups. Fifteen groupings were made on this basis starting with 15-19 years and ranging to 85 years and over.

RESULTS

Table 1 gives percentages by five-year age groups of the total licensees in the state and the total of all licensees, male and female, for 1953 and 1958. The changes in percentages holding licenses are indicated in column (6) and (7) of Table 1 for male and female respectively for each of the two years. It will be noted that there is a consistent reduction in male drivers from 20-39. This is not so clearly shown for female drivers.

In Table 2 the tabulations of the two sexes are consolidated and there seems to be consistently fewer persons licensed between 20-39 and also from 75 to 85. Only speculations as to the reasons for these changes can be offered. All other categories show increases. Hence we know that any increases in accidents and/or violations from 1953 to 1958 of age group 20-25 are not due to increases in the number of licensed drivers.

The percentage of licensees as well as that of accident and/or violation involvement for each age grouping is listed in Table 3. A tabulation showing the difference between the per cent of representation of licensees and the per cent of accidents and/or violations by equivalent age groupings is given in column (4). Those marked (+) have an excess and those marked (—) have a deficiency in accidents and/or violations considering the number in the age group.

SUMMARY

A study of the driving population in Iowa for 1953 and 1958 shows a decrease in number for males between ages 20-35 and for the sexes combined. The changes have not been large but the greatest decreases have been in the 25-29 year old groups. When women only are considered decreases are noted in the same groups but less conspicuously.

When percentage of licensees and percentage of accidents and/or violations are compared for the same age groups a decrease is noted in drivers but increases of 1.5 and 4.5 per cent are consistently noted in accident and/or violations for the 20-34 age range. Thus while the number of licensees has decreased around 2 per cent for these groups, the violation and/or accident involvement has increased by more than 3 per cent on the average. The greatest relative increase in accidents and/or violations is in the 20-24 year-old group.

CONCLUSIONS

The data warrant only limited observations but would appear to substantiate the following concluding remarks:

1. Other findings that the 20-24 year-old drivers are our greatest traffic offenders is confirmed.
2. An increase in accident and/or violation involvement is found in contrast to a slight decrease in licensees from 1953 to 1958.
3. The records of 15-19 year-old drivers show slight improvement.

DEPARTMENT OF PSYCHOLOGY
DRIVING RESEARCH LABORATORY
IOWA STATE COLLEGE
AMES, IOWA