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Analysis of Automobile Accident Trends of Temporary Nature

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July, 1953, showed the most serious motor vehicle fatality situation that the State of Iowa has ever witnessed. Seventy-six persons met their deaths in highway accidents during this month. This compares with 53 for the month of July, 1952, and 49 for the same month in 1951.

Based on the hypothesis that accident records for the years 1951 and 1952 are representative and under the assumption of equal traffic and mileage travelled it can be shown that the increase of 25 deaths in July, 1953, is significant beyond the one per cent level of confidence. Even allowing for an estimated 10 per cent increase in mileage driven over the two previous years, which is high, the increase is almost as significant. This indicates that one would not expect such an increase during 100 months or more of similar samples. Therefore it would seem that an emergency situation existed for July, 1953 in Iowa.

The loss of life and limb, of money, material and time is of such magnitude that a full scale attack upon it must be made. In the nation in 1953, about 40,000 persons were killed and 2 million others injured, with costs in money, direct and indirect, approximating 4 billion dollars.

Accidents in industry have been cut over 80 per cent during the past 40 years and are in the process of being further reduced. In the field of travel, the railroads have been able to cut their accident rates until they parallel the reductions in industry.

Purpose of the Study

This study is an attempt to gather statistics relative to the accident situation in Iowa for the month of July, 1953, in order to compare these with other months and other years and to ascertain, if possible, any factors which may have been introduced to account for the unusually large toll. It would be advisable to make comparisons on the basis of numbers and trends but this is beyond the scope of the present study. Some basic facts will be reviewed with

*The inspiration for this study were the researches carried on at Iowa State College under a Grant for Driving Research by the Allstate Insurance Company of Chicago, Illinois.

inferences that may be warranted which may help reduce accidents or at least contribute to clearer thinking in accident analysis.

Methods and Procedures

This study is based mostly upon data received from the Iowa State Department of Public Safety (1) and from the Travelers Insurance Company (2).

It was first necessary to design a procedure for tabulating the type of data which were available for the study. It was then necessary to review data for the years 1950, 1951, 1952, and 1953, and arrange these data in such a way as to provide further inferences.

It was deemed advisable to deal only with fatal traffic accidents since these data are more complete and reliable. Death certificates must be reported accurately.

The Study

An analysis of the data indicated that the human factor was largely responsible for the appalling increase in accident toll in July, 1953, as well as in the other months and years studied.

About 80 per cent of the fatal accidents happened on a straight road, during clear weather, with little or no highway or vehicular obstruction. In over 95 per cent of the cases the vehicles involved were apparently in good condition.

In the United States, in 1952, 92.5 per cent of the drivers involved in fatal accidents were men. In Iowa, in 1952, about 92.2 per cent were men. In July, 1953, only 86 per cent were men. More housewives were involved in July than usual on a percentage basis. However, of the 92 drivers involved in fatal accidents in July, only 13 were women. None of these figures, however, are likely to show significant differences.

Occupations were about equally represented. The farmer, the laborer, the commercial driver, each average about 20 per cent. Since occupational groups are not equal in the state this might show some difference if corrected for numbers. In July, 1953, there were more housewives and fewer commercial drivers involved in fatal accidents than for corresponding periods in other years.

About 90 per cent of the drivers involved in accidents in July, 1953, had not been drinking and about 90 per cent had no physical defects of a nature thought to be detrimental to driving. In one-half of the cases involving defects, the driver was listed as "apparently

asleep." The last observation deserves further investigation since it was higher than usual.

It is the urban residents who are having the accidents in the rural areas. Although 75 per cent of all drivers involved were residents of urban centers, yet 80 per cent of all fatal accidents took place on open roads in rural areas. Again these figures mean very little at their face value. Correction constants need be applied before sound conclusions may be drawn.

In 1952, 93.7 per cent of all fatal accidents involved a violation. The July figures, based upon driver violations, would indicate an even higher percentage. Fifty per cent of the violations in 1952 indicated the car out of control, 20 per cent did not have the right-of-way and 14-19 per cent were on the wrong side of the road. In July, 1953, about 44 per cent of the violations were classed as not having the right-of-way or as being on the wrong side of the road. There would appear to be an excess of the latter two types of violations during this month.

One of the noticeable differences between the 1952 and the July, 1953, data is that in 1952 in only 10 per cent of the fatal accidents were highway obscurements listed as a contributing factor. The highway obscurements listed in 50 per cent of the cases were trees, crops and bushes. This would suggest the need for keeping corners free from weeds and tall crops and for greater caution being exercised on this hazard by drivers.

In 75 per cent of the cases the vehicle involved was a passenger car, commercial vehicles were involved in about 12 per cent of the accidents. Vehicles 2-3 years old were the ones with the highest percentage of involvement, about 31 per cent, while the 4-6 year old group had an 18 per cent involvement. Without correction figures this is difficult to evaluate altho it indicates that the older cars are not the worst offenders.

The road was straight in about 80 per cent of the cases. No comparison data were available. Accidents occurred on concrete in 65.3 per cent of the cases in 1952 and 57 per cent in July, 1953. Fatalities occurred on gravel in 27.7 per cent of the accidents in 1952 and 38.7 per cent in July, 1953. A much higher percentage of accidents apparently took place on gravel roads in July, 1953 than in 1952. The difference would probably show significance if tested.

The scope of this study did not permit an exhaustive investigation such that suitable corrections could be applied and comparisons properly made. A few suggestions will be given which may

serve to increase highway safety and to improve procedures in accident analysis.

Summary and Conclusions

The facts relative to fatal accidents indicate that the drivers of automobiles are largely responsible for the huge accident toll. Preventive measures will probably involve educating and re-educating drivers to bring about a change in their attitudes, an increase in their knowledge and interpretation of driving and driving conditions as well as to develop a higher respect for the laws of the road. Drivers must be taught to be more alert, to recognize and notice hazardous conditions and to follow all regulations and rules of the road. They should show courtesy to other drivers, keep the speed down to within controllable and safe limits on all types of roads. There was some evidence that drivers with less experience had an excess of accidents during this month.

In order to accomplish the desired results, a comprehensive program based on scientific facts should be formulated and initiated. Too much safety activity is well-intended but haphazard. It resembles medical practices among primitive peoples.

1. First, an extensive and effective program of research should be continued and developed in order that facts and information can be accurately evaluated.

2. Driver education, both classroom and behind-the-wheel, under competent and well-trained instructors, should be improved and extended to cover more realistic problems in driving as shown by research studies. Much of it is at the primer level.

3. Highway engineering should help make possible the fast, efficient and safe movement of traffic not only through improvement of the roadway proper, but should include safety control features, removal of physical and psychological hazards along the highway. Especial attention should be given to stabilizing gravel and to keeping corners clear of weeds and other obstructions in summer.

4. Enforcement should be made adaptable to counteract the seasonal variations in hazards.

5. More periodic and seasonal warnings should be released and more tickets issued for hazardous types of driving. A merit or point system might lead non-conformist drivers to exericse more judgment and caution while at the wheel.

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