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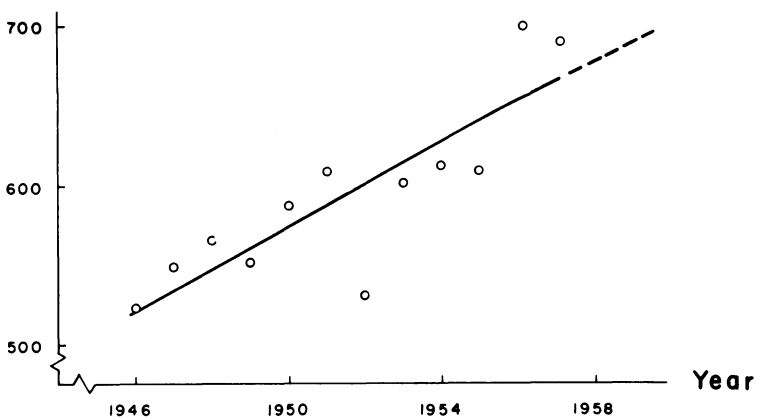
Prediction of Iowa Traffic Fatalities

By VICTOR W. BOLIE

The trend in highway traffic accident fatalities has important ramifications in legislation, insurance, education and law enforcement. The present fatality rate in Iowa is about 5 deaths per 100 million motor vehicle miles, which is not greatly different from the national average. The work of Lauer and Swanson on reciprocal, logarithmic and linear trends of fatality rates shows that the number of traffic deaths per 100 million motor vehicle miles is decreasing in such a way that a linear extrapolation would indicate a zero rate by the year 1978. However, as a result of a more rapidly increasing traffic density, the yearly number of Iowa traffic fatalities is steadily increasing. The purpose of this paper is to illustrate this annual trend and to graphically illustrate the fatality prediction for the year 1958.

Numerical data from the Iowa Department of Public Safety is plotted in Figure 1, showing the annual number of traffic fatalities for the past 12 years. The year of 1952 shows an irregularly low number of 531 deaths, but the remaining entries indicate a definitely increasing annual number of fatalities. The coefficients of the equation of the straight line superimposed on the plot in Figure

Fatalities



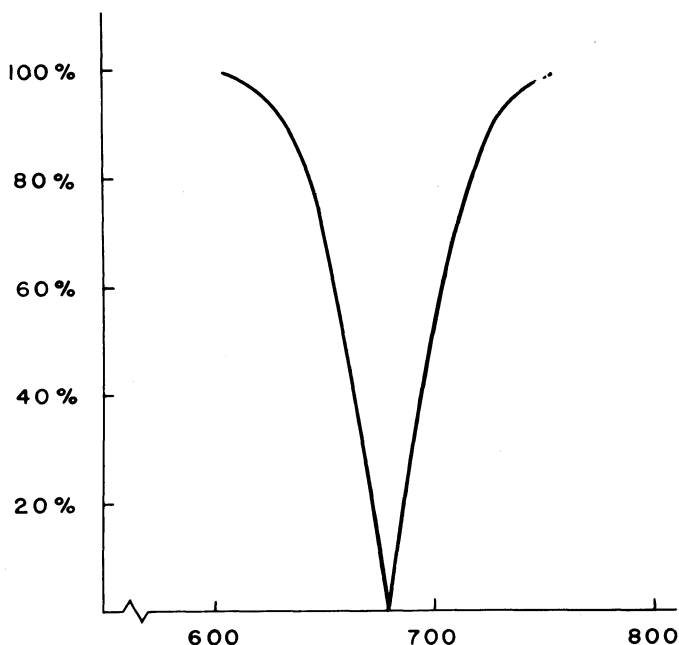
Trend in traffic fatalities in Iowa

Figure 1

1 are those determined by a least-square fit. The slope of the line indicates an increase of 13.3 fatalities per year.

Extrapolation of the straight line indicates a prediction of 680 traffic fatalities for the year 1958. The uncertainty in this prediction may be based on the root-mean-square value of 29.2 for the deviation of the data points from the straight line. Thus, using Gaussian probability, it may be said with 68 per cent prediction reliability that the number of fatalities for 1958 will lie between 651 and 709. A plot of the reliability of prediction versus the upper and lower limits of the prediction is shown in Figure 2. This graph indicates that the fair betting odds are 50-50 that between 660 and 700 citizens will die on the Iowa highways in 1958.

Reliability of prediction



Fatalities predicted for 1958

Figure 2

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