

SKELETAL PLAN FOR A STUDY OF DAILY MORTALITY

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The study reported in *Science*, Vol. 172 (1971), pp. 265-267 used multiple regression to study the association between air pollutants and mortality in Los Angeles county. Of the three regressions reported therein, the second provides a method for predicting the total number of deaths each day using a typical multiple regression model with terms for cyclic variation and trend and a quadratic formulation for temperature with lags of up to three days.

The approach should be applicable to any reasonably homogeneous area with sufficient population. By obvious extensions it can be used to examine specific causes or other variables such as (dropping temperature) "proportion of births with congenital malformations."

The essential features are: (1) daily occurrences are examined; and (2) allowance is made for cyclic variation (such as season of year), secular changes (trend) and the most important confounding variable, temperature.

Two applications to the study of specific pollutants (carbon monoxide and total oxidants) are given in the paper. The method could be applied to any pollutant for which comparable data are available.

Another extension, not included in that paper, is application of standard industrial quality control methods to compare the actual number of deaths with the predicted number. This could be used to detect unusual increases in mortality such as might be caused by an epidemic or by an episode of air pollution. Only three inputs are required for each day: date, maximum temperature and a count of deaths. In principle this could be operated on very nearly a "real-time" basis.