

ABSTRACTS OF PAPERS

(Abstract of a paper presented at the Eastern Regional meeting, University Park, Pennsylvania, April 21–23, 1971.)

129-44. Methods for assessing multivariate normality (Invited). D. F. ANDREWS, R. GNANADESIKAN AND J. L. WARNER, Bell Telephone Laboratories.

The paper reviews a variety of techniques for evaluating the normality of the distribution of a body of multivariate data. Two broad categories of approaches are considered: (i) methods associated with data-based transformations for improving normality, and (ii) other techniques. Under each category, both simple though not sufficient methods (e.g. assessment of marginal normality) as well as more complete techniques (i.e. evaluating joint normality) are discussed. More specifically, the essential idea in the approaches associated with transformations is to assess the deviations of the estimated values of the transformation parameters involved from “null” (i.e. no transformation is required) values. Among the methods not related to transformations, firstly there are the univariate techniques useful for evaluating marginal normality of the individual variables. Secondly, linearity of the regressions among the variables and the behaviour of the generalized distances of the observations from their centroid may be investigated. Thirdly, and most generally, methods for assessing joint normality can be developed. The χ^2 goodness-of-fit test is a classical example, but additional techniques are needed and a few are discussed in this paper.

The detailed developments are for the bivariate case, but extensions to higher dimensions are implicit and, in principle, direct. Several illustrative examples are included. (Received April 21, 1971.)

(Abstracts of papers presented at the Annual meeting, Fort Collins, Colorado, August 23–26, 1971. Additional abstracts will appear in future issues.)

131-5. Arbitrary event initial conditions for branching Poisson processes. A. J. LAWRENCE, Thomas J. Watson Research Center.

Branching Poisson processes are now a well-known class of stationary point processes, being introduced by Bartlett, *J. Roy. Statist. Soc. Ser. B* **25** 264–296, and Lewis, *J. Roy. Statist. Soc. Ser. B* **26** 398–456; they are built up by the superposition of main Poisson events and events from finite renewal subsidiary processes which are initiated by the Poisson events. Arbitrary time (equilibrium) initial conditions were given by Lewis, *J. Appl. Probability* **6** 355–371 and here the corresponding arbitrary event initial conditions are obtained from an extension of Khintchine’s analytic notion of an arbitrary event in a stationary point process. These conditions are shown to jointly specify the distribution of the number of