

those areas. For teachers, statisticians in general, and members of operations research teams, this revised edition will be found to fill a real need. For applied work in fields like engineering, medicine, sociology, and psychology, the full treatment of the basic concepts of regression and correlation will be of immense value, and some slight reconsideration of the illustrative examples given will often provide insight into the real problems in these other fields.

Thanks are due to both the authors and publishers for making this material available. It is a text that should be in the library of every technical organization.

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11[K].—E. FIX, J. L. HODGES & E. L. LEHMANN, "The restricted chi-square test," included in *Probability and Statistics*, edited by U. GRENANDER, Almqvist & Wiksell, Stockholm; John Wiley and Sons, New York, 1959, pages 92–108 [See the following review].

This paper contains some new tables of the power function of chi-square tests, i.e., of the non-central chi-square distribution, for small degrees of freedom. As is well-known, the power function  $\beta = \beta(\alpha, f, \lambda)$  of a chi-square test depends on three parameters:  $\alpha$ , the "level of significance" at which the test of the null hypothesis  $H_0$  is conducted, i.e., the probability of the test falsely rejecting  $H_0$  when it is true;  $f$ , the "degrees of freedom" of the test; and  $\lambda$ , the "non-centrality parameter," which measures the "distance" of the alternative  $H = H(\lambda)$  under consideration, from the null hypothesis  $H_0$ . The tables of this article give  $\lambda$  to 3D as a function of  $\beta = 0.5(0.1)0.9, 0.95$ , for  $f = 1(1)6$  and  $\alpha = 0.001, 0.005, 0.01, 0.05(0.05)0.3, 0.4, 0.5$ . The quantity tabulated is that value of the parameter  $\lambda$  which satisfied the equation

$$e^{-(\lambda/2)} \sum_{k=0}^{\infty} \frac{1}{k! 2^{(1/2)f+2k-1} \Gamma(f/2)} \int_{\chi_f(\alpha)}^{\infty} x^{f+2k-1} e^{-(1/2)x^2} dx = \beta$$

where  $f$  = number of degrees of freedom and  $\chi_f(\alpha)$  is such that

$$\frac{1}{2^{(1/2)f-1} \Gamma(f/2)} \int_{\chi_f(\alpha)}^{\infty} x^{f-1} e^{-(1/2)x^2} dx = \alpha.$$

These tables thus supplement those of E. Fix (1949), reviewed in *MTAC*, v. 4, 1950, p. 206–207.

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12[K].—ULF GRENANDER, Editor, *Probability and Statistics*, Almqvist & Wiksell, Stockholm; John Wiley & Sons, New York, 1959, 434 p., 24 cm. Price, \$12.50.

"Once it had been suggested that a book of studies in probability and statistics should be presented to Harald Cramér in honor of his 65th birthday, the authors