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ABSTRACTS OF PAPERS

(An abstract of a paper presented at the Annual meeting, Madison, Wisconsin, August 26–30, 1968. Additional abstracts appeared in earlier issues.)

92. The distribution of the sample correlation coefficient with one variable fixed. DAVID HOGBEN, National Bureau of Standards.

For the usual straight-line model, in which the independent variable takes on a fixed, known set of values, it is shown that the sample correlation coefficient is distributed as Q with $(n - 2)$ degrees of freedom and noncentrality $\theta = (\beta/\alpha)/\sqrt{\sum (x_i - x)^2}$. The Q variate has been defined and studied previously by Hogben et al. (*Ann. Math. Statist.* **35** 298–314 and 315–318). It is noted that the square of the correlation coefficient is distributed as a non-central beta variable.

(Abstracts of papers presented at the Central Regional meeting, Iowa City, Iowa, April 23–25, 1969. Additional abstracts have appeared in earlier issues and will appear in future issues.)

6. Jackknifing U-statistics. JAMES N. ARVESEN, Purdue University.

Previous work of Hoeffding on U-statistics (*Ann. Math. Statist.* **19** (1948) 293–325), and Miller on the jackknife (*Ann. Math. Statist.* **35** (1964) 1594–1605) is combined to obtain the following result. Let $X_1, \cdots, X_n$ be independent and identically distributed random variables, and $U(X_1, \cdots, X_n)$ be the U-statistic based on these random variables. Assume $U(X_1, \cdots, X_n)$ is an unbiased estimate of η, and Var $(U(X_1, \cdots, X_n)) \rightarrow \sigma^2 < \infty$ as $n \rightarrow \infty$. Let f denote a real-valued function defined on the real line, which in a neighborhood of η has a bounded second derivative. Let $\hat{\theta}$ denote the jackknife estimate of $\theta = f(\eta)$, and s_f^2 denote the sum of squares as defined in Miller. Then as $n \rightarrow \infty$, $n^{1/2}(\hat{\theta} - \theta)/s_f \rightarrow_{\mathfrak{L}} N(0, 1)$. The result is then extended to functions of q U-statistics, that is real-valued functions defined on R^q. Finally an extension is presented to the case where $X_1, \cdots, X_n$ are independent (not necessarily identically distributed). Applications are then presented to obtain both asymptotic tests and confidence intervals for variance, components in Model II ANOVA. The unbalanced case is also treated. (Received 27 January 1969.)

7. Bayesian prediction and population size assumptions. T. L. BRATCHER and W. R. SCHUCANY, Southern Methodist University.

This paper is concerned with the distribution of the number successes in a random sample given the results of a previous sample from the same population. Assuming uniform weights (i.e., uniform prior) on the proportion of successes in the original population, Bayes rule is utilized to obtain the desired distribution. If the size of the population is finite, say N, then the hypergeometric density gives the probabilities for the number of successes in a random sample. On the other hand, if N is infinite, the binomial gives the probabilities. Somewhat surprisingly, the resulting distribution is independent of the population size N and is the same for both the finite and infinite cases. (Received 9 January 1969.)

8. Useful bounds in packing problem. BODH RAJ GULATI and E. G. KOUNIAS, Eastern Connecticut State College and McGill University.

Let $m_t(r, s)$ denote the maximum number of points in finite projective geometry $PG(r - 1, s)$ of $(r - 1)$-dimensions based on Galois field $GF(s)$, where s is a prime or power