If possible let $b < v$. Consider the $v \times v$ matrix

$$(2.4) \qquad N = \begin{bmatrix} n_{11} & n_{12} & \cdots & n_{1b} & 0 & \cdots & 0 \\ n_{21} & n_{22} & \cdots & n_{2b} & 0 & \cdots & 0 \\ \cdots & \cdots & \cdots & \cdots & \cdots & \cdots & \cdots \\ n_{v1} & n_{v2} & \cdots & n_{vb} & 0 & \cdots & 0 \end{bmatrix}$$

where the last $v - b$ columns of N consist of zeros. It follows from (2.2) and (2.3) that

$$(2.5) \qquad NN' = \begin{bmatrix} r & \lambda & \cdots & \lambda \\ \lambda & r & \cdots & \lambda \\ \cdots & \cdots & \cdots & \cdots \\ \lambda & \lambda & \cdots & r \end{bmatrix}$$

where N' denotes the transpose of N.

$$(2.6) \qquad \det (NN') = \{r + \lambda(v - 1)\} (r - \lambda)^{v-1}$$

But $$= kr(r - \lambda)^{v-1} \quad \text{from (1.1).}$$

$$(2.7) \qquad \det (NN') = \det N \det N' = 0.$$

This makes $r = \lambda$, and contradicts (1.2). Hence the assumption $b < v$ is wrong, and we must have

$$(2.8) \qquad b \geq v$$

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ABSTRACTS OF PAPERS

(Presented September 1, 1949 at Boulder at the Twelfth Summer Meeting of the Institute)

1. **Structure of Statistical Elements.** DUANE M. STUDLEY, Foundation Research, Colorado Springs, Colorado.

Research in logical semantics and in practical elementation has set forth the proposition that all words and ideas have set form. As a consequence of this universal proposition all notions and conceptions in statistics should be accessible to set-theoretic analysis and interpretation. This paper explains the results of a preliminary analysis performed on statistical notions and conceptions with a view to a proper organization of definitions and conceptions which will, it is hoped, make possible a better and simpler construction of statistics from a system of basic notions.