EXPRESSIONS FOR THE GENERATING FUNCTION OF THE HYPERGEOMETRIC DISTRIBUTIONS WHEN THE PARAMETERS ARE OF DIFFERENT NATURE.

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Our aim in the present paper is to express the distribution function explicitly in terms of parameters of the two categories. The generalised integral and differential coefficient of the finite hypergeometric distribution function have been evaluated and differential equation has been generated.

Key Words : Hypergeometric distributions/ Summation formula replacement and non replacement categories/ Probability of a random variable.

1. INTRODUCTION

It is a well established fact that if there be a given finite population of N elements, exactly M of Which belong to the Category U, then the probability of a random sample of n elements, which includes exactly x elements of category U, is defined as a hypergeometric distribution. The user of the distribution may come across such situations where some of the elements be infinite and others are finite, we may cite the example of the case of an urn containing boxes of balls of different colours, out of which replacement is permissible to a particular group.

The hypergeometric function which shall arise in such type of distributions shall be of following nature.

$$F^{p\,r}_{q\,s}\left[\begin{matrix}(a_1, n_1), (a_2, n_2), \ldots\ldots\ldots\ldots, (a_p, n_p); a_1', a_2', \ldots\ldots\ldots, a_r' \\ (b_1, m_1), (b_2, m_2), \ldots\ldots\ldots\ldots, (b_q, m_q); b_1', b_2', \ldots\ldots\ldots\ldots b_s'\end{matrix}\; x\right] \quad \ldots\ldots\ldots\ldots\ldots\ldots (1.1)$$

Where the number of chances $n_1, n_2, \ldots\ldots\ldots\ldots, n_p; m_1, m_2, \ldots\ldots\ldots\ldots, m_q$ (of both categories) are in ascending order. The parameters $(a_1, a_2, \ldots\ldots\ldots\ldots, a_p)$; $(b_1, b_2, \ldots\ldots\ldots\ldots, b_q)$ belong

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