CORRECTION NOTES

CORRECTION TO "GENERALIZATIONS OF A GAUSSIAN THEOREM"

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The following correction should be made to the paper cited in the title (*Ann. Math. Stat.*, Vol. 29 (1958), pp. 106–117). The letters e and ϵ appear interchangeably in sections 8 and 9. The values they represent are really the values of ϵ with $\theta = \theta^*$. Accordingly it would be much better if the ϵ at the beginning of the second sentence of section 8 on page 113 were replaced by $e = A\theta^* - x$, and each remaining ϵ in section 8 and section 9 were changed to e. I am indebted to M. M. Rao who called this to my attention.

CORRECTION TO AND COMMENT ON "EQUALITY OF MORE THAN TWO VARIANCES AND OF MORE THAN TWO DISPERSION MATRICES AGAINST CERTAIN ALTERNATIVES"

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This note is motivated by a desire to clarify certain points in my paper [1]. In Section 4 of [1], the region of acceptance, (4.3), of a test for the null hypothesis $H_0:\Sigma_1 = \Sigma_2 = \cdots = \Sigma_k = \Sigma_0$ is in error. The central result, which should have been emphasized, was (5.5) of [1] which, of course, is an exact probability statement with preassigned probability $1 - \alpha$. Starting from (5.5), however, one obtains as the implied acceptance region for H_0 not (4.3), but the following intersection region:

$$\text{(A)} \qquad \frac{c_{\max}(S_j)}{c_{\min}(S_0)} \geqq \lambda_{j1} \quad \text{and} \quad \frac{c_{\min}(S_j)}{c_{\max}(S_0)} \leqq \lambda_{j2}, \qquad j = 1, 2, \cdots, k,$$

where

$$\lambda_{j1} < \lambda_{j2} \quad \text{and} \quad \frac{c_{\min}(S_j)}{c_{\max}(S_0)} \leqq \frac{c_{\max}(S_j)}{c_{\min}(S_0)}.$$

Since (A) is obtained by implication from (5.5) of [1], it is, of course, true that this acceptance region will have a probability under the null hypothesis of at

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least $1 - \alpha$, and the phrase "size $(1 - \alpha)$" following (4.4) of [1] is not meant to imply that the test proposed is a similar region test. Also, starting again from (5.5) of [1], the implied simultaneous confidence statements (5.10) of [1], with a confidence coefficient $\geqq 1 - \alpha$, were obtained, and the main objective of [1] was to obtain such confidence statements, while the test for H_0 was only of secondary interest.

A question raised by T. W. Anderson, and which, in fact, was originally investigated but temporarily abandoned by me, is whether it would not be more desirable to consider a test with the following intersection region of acceptance for H_0:

$$\text{(B)} \qquad \nu_{j1} \leqq c_{\min}(S_j S_0^{-1}) \leqq c_{\max}(S_j S_0^{-1}) \leqq \nu_{j2}, \qquad j = 1, 2, \cdots, k,$$

where ν_{j1} and ν_{j2}, for $j = 1, 2, \cdots, k$, are to be chosen such that this region is of size $1 - \alpha$ under H_0. This is the natural extension of the test proposed by Roy [2] for the case $k = 1$, and it formed the starting point of my original investigation that led to [1]. While (B) is preferable to (A) as a test of H_0 against certain types of alternatives, because the size of (B) does not depend on the characteristic roots of $\Sigma_1 = \Sigma_2 = \cdots = \Sigma_k = \Sigma_0$, yet, for $k > 1$, the distribution problem associated with it seemed intractable and, furthermore, my initial attempts to obtain simultaneous confidence statements associated with (B) were not successful. These points are now being more fully investigated. Finally, the test with acceptance region (A) may, against certain alternative hypotheses, be preferable to (B), although even here (A) itself may not be the best possible. This last point is to be more fully developed in a joint paper by S. N. Roy and myself.

I thank T. W. Anderson, who kindly pointed out the need for clarification, and S. N. Roy for his comments and suggestions.

REFERENCES

[1] R. GNANADESIKAN, "Equality of more than two variances and of more than two dispersion matrices against certain alternatives," *Ann. Math. Stat.*, Vol. 30 (1959), pp. 177–184.

[2] S. N. ROY, "On a heuristic method of test construction and its uses in multivariate analysis," *Ann. Math. Stat.*, Vol. 24 (1953), pp. 220–238.

CORRECTION TO "THE USE OF SAMPLE QUASI-RANGES IN ESTIMATING POPULATION STANDARD DEVIATION"

BY H. LEON HARTER

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In the paper cited in the title (*Ann. Math Stat.*, Vol. 30 (1959), pp. 980–999), on p. 988, the numerator and the denominator of (2) should be interchanged. This error does not affect the tables or other portions of the text.