

Addendum to *U*-Statistics and Imperfect Ranking in Ranked Set Sampling

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Abstract

A simpler proof is provided for Lemma 1 of Presnell and Bohn (1999).

The proof of Lemma 1 given in Presnell and Bohn (1999) is already simple and is perhaps useful for understanding the source of errors in other works. Nevertheless, it is unnecessarily complicated. Unfortunately this was not noticed before the paper appeared. The lemma is restated here and a simple, one-line proof is given.

Lemma 1.

$$\frac{1}{k} \sum_{j=1}^k F_{[j]}(x) = F(x) \quad \forall x. \quad (1)$$

Proof. If X_1, \dots, X_k represents an i.i.d. sample from F , and $X_{[1]}, \dots, X_{[k]}$ the corresponding judgement-ordered values, then

$$\sum_{r=1}^k F_{[r]}(x) = E \left\{ \sum_{r=1}^k I(X_{[r]} \leq x) \right\} = E \left\{ \sum_{r=1}^k I(X_r \leq x) \right\} = kF(x).$$

Note also that in the fifth line of the statement of Theorem 2, Y_p should be replaced by Y_q .

References

PRESNELL, B. and BOHN, L. L. (1999). *U*-statistics and imperfect ranking in ranked set sampling. *Journal of Nonparametric Statistics* **10** 111–126.