

FAMILY OF ESTIMATORS OF POPULATION VARIANCE IN SUCCESSIVE SAMPLING

Nursel Koyuncu¹

SUMMARY

Successive sampling consists of selecting sample units on different occasions such that some units are common with samples selected on previous occasions. We consider sampling on two occasions from a finite population of size N . Associated with the i th unit are, the study variable, and auxiliary variable. Note that on the first occasion, the study variable y is called the auxiliary variable x . Using simple random sampling, units are selected on the first occasion. A random sub sample of units are retained for use on the second occasion, while a fresh simple random sample of units are drawn on the second occasion from the remaining units of the population. In this scheme, drawing sample at different time point gives more reliable estimates than one-stage sampling. We can take into account the change of the characteristics over different occasions. In this paper we have intended to improve the precision of variance estimates at the current occasion. We have proposed a family of estimators of population variance and the expressions of bias and mean square error are derived in successive sampling. To analyze its properties we have carried out an empirical study based on real populations.

Keywords: ratio estimator, mean square error, successive sampling,...

AMS Classification: 62D05

References

- [1] KOYUNCU N. KADILAR, C.(2010). On Improvement in Estimating Population Mean in Stratified Random Sampling. *Journal of Applied Statistics* **37**(6), 999–1013.
- [2] SINGH, H.P., TAILOR R., SINGH S., KIM J.M., (2011). Estimation of Population Variance in Successive Sampling. *Qual Quant* **45**, 477–494.

¹Hacettepe University Statistics Department Turkey
nkoyuncu@hacettepe.edu.tr