A NEW COMPUTATIONAL APPROACH FOR TESTING EQUALITY OF INVERSE GAUSSIAN MEANS UNDER HETEROGENEITY

Esra Yigit Gökpınar [*], Esra Polat[†], Fikri Gökpınar[‡], Süleyman Günay[§]

Abstract

In this article, a testing procedure based on computational approach test is proposed for the equality of several inverse Gaussian means under heterogeneity. Not requiring the knowledge of any sampling distribution, depending heavily on numerical computations and Monte Carlo simulation, moreover, figuring out the critical region automatically are the advantages of the computational approach test. We compare it with some of the existing tests; the parametric bootstrap and the generalized test variables in terms of type I risks and powers by using Monte Carlo simulation.

1. Introduction

Inverse Gaussian (IG) distribution is given in quite a number of books on stochastic processes and probability. The probability distribution of the first passage time in Brownian motion is given by Schrödinger (1915). Since Tweedie (1945) has shown the inverse relationship between the cumulant generating function of the first passage time distribution and that of the normal distribution, it is called as an IG for the first passage time distribution. Further, as Wald (1947) has derived the limiting form of IG distribution, it is also called as Wald's distribution, especially in the Russian literature [4].

---

[*]Gazi University, Department of Statistics, 06500 Teknikokullar, Ankara, Turkey. Email: eyigit@gazi.edu.tr

[†]Hacettepe University, Department of Statistics,, 06800 Beytepe, Ankara, Turkey. Email: (E. Polat) espolat@hacettepe.edu.tr

[‡]Gazi University, Department of Statistics, 06500 Teknikokullar, Ankara, Turkey. Email: fikri@gazi.edu.tr

[§]Hacettepe University, Department of Statistics,, 06800 Beytepe, Ankara, Turkey. Email: sgunay@hacettepe.edu.tr