Dear Editors,

This article introduces an add-on package, distr6. We believe that this is a novel implementation to probability distributions in R using the latest R6 object-oriented programming paradigm, and thus merits publication to the R Journal. The primary reasons for this are three-fold. Firstly, probability distributions are a fundamental concept in statistics, which R handles via a few simplistic functions, these do not reflect the full complexity of probability distributions but do allow very fast and efficient modelling of some important representations of random variables. This paper highlights the added benefit of the object-oriented interface, the improvements that are made by using R6, and the focus on a user-friendly interface (reflected by a good community presence with over 37k downloads). Secondly, this paper introduces novel and re-usable approaches to the R6 paradigm, including fundamental object-oriented concepts such as abstract classes and decorators; this paper introduces these both in the distr6 setting and in a more general manner for re-use in external packages. Thirdly, this paper introduces novel definitions and notations for probability distributions, which highlight the need for an object-oriented approach for distributions and provide an efficient and concise manner for discussing probability distributions. We believe that this add-on package can further the development of handling complex mathematical objects in R and can provide an interesting use-case for the R6 paradigm, thus furthering development in this area. The paper is We hope you look upon this paper favourably.

Kind Regards,

Raphael Sonabend