

**Siniša Lakić**

Univerzitet u Banjoj Luci

Filozofski fakultet

Odsjek za psihologiju

Banja Luka, Republika Srpska, Bosna i Hercegovina

## BAYESOV FAKTOR: OPIS I RAZLOZI ZA UPOTREBU U PSIHOLOŠKIM ISTRAŽIVANJIMA

**Apstrakt:** Cilj ovog rada je da našu širu psihološku publiku bolje upoznam sa Bayesovim faktorom (u notaciji BF ili B), odskora izuzetno popularnim statističkim metodom testiranja hipoteza u psihologiji koji čak pretenduje da zamijeni funkciju P-vrijednosti. Rastuća popularnost se najočitije vidi iz rezultata pretrage Google Scholar bibliografske baze kada se kao ključne riječi postave “Bayes factor” i “psychology”. Za 2006. godinu se registruje tek 76 pogodaka, 2010. je to 176, 2014. već 436, dok je broj radova objavljenih samo u 2018. godini već 1570.<sup>1</sup> Uprkos bujajućem trendu, na našim jezicima nisam pronašao tekstove koji bi opisali BF i pojasnili njegove prednosti u odnosu na P-vrijednosti. Studenti psihologije, praktičari koji žele da prate naučne trendove, kao i iskusni istraživači, su tako osuđeni na relevantne radove na engleskom jeziku koji su često saturirani naprednijom statističkom terminologijom i statističkom notacijom što svakako otežava razumijevanje teksta i demotivše čitaoce. Iz tog razloga, nastojao sam da ovaj tekst napišem jezikom razumljivim svima onima koji posjeduju fundamentalna statistička znanja. Rad počinjem opisom motiva za upotrebu BF, nakon čega prikazujem teorijsku podlogu BF kroz veoma jednostavne primjere, a rad završavam navodeći prednosti i ograničenja BF, uz sugerisanje softverskih rješenja pomoću kojih zainteresovani mogu sami da izračunavaju BF za niz različitih kvantitativnih nacrta i uklope novu paradigmu u svoj istraživački repertoar.

**Ključne riječi:** Bayesov faktor, P-vrijednosti, statističko testiranje hipoteza.

## BAYES FACTOR: WHAT IT IS AND WHY IT SHOULD BE USED IN PSYCHOLOGICAL RESEARCH

**Abstract:** The aim of this paper is to get our wider psychological audience acquainted with the Bayes factor (commonly denoted as BF or B). In recent times, BF became a highly popular statistical method for hypothesis testing in psychology, with claims that it could replace the role of P-values. Its increasing popularity is evident from the results of a Google Scholar search using the terms “Bayes factor” and “psychology”: there were only 76 hits in 2006, 176 in 2010, 436 in 2014, while the number of papers published only in 2018 reached 1570.<sup>2</sup>

<sup>1</sup> Da rast nije proizvod sve većeg ukupnog broja objavljenih radova pokazuje analiza pretrage za ključne riječi “psychology” i “regression”, gdje se nakon rasta dešava pad u 2018. godini: 66400 (2006), 106000 (2010), 117000 (2014), 50600 (2018). U oba slučaja iz pretrage su izuzeti patenti i citiranja.

<sup>2</sup> That this increase is not a result of an overall increase in the number of published papers can be seen from the analogous search using the terms “psychology” and “regression”. After the increase, one observes a decrease in 2018: 66400 (2006), 106000(2010), 117000(2014), 50600(2018). In both cases, patents and citations were excluded from the search.

Despite this thriving trend, I could not find texts written in our languages (BCS) describing BF and clarifying its claimed advantages over P-values. Thus, psychology students, practitioners who want to keep up with research trends, as well as experienced researchers, have to read relevant papers in English. Unfortunately, those texts are often saturated with advanced statistical terminology and notation, which certainly impedes understanding and demotivates the readers. For that reason, I tried to write this paper using language which should be understood by all who possess fundamental statistical knowledge. I begin by describing motives for using BF, after which I present its theoretical background through some straightforward examples. I finish by presenting the advantages and limitations of BF, and suggesting which software the interested readers should use in order to calculate BF for various quantitative designs and thus, incorporate a new paradigm in their research repertoire.

**Keywords:** Bayes factor, P-values, statistical hypothesis testing