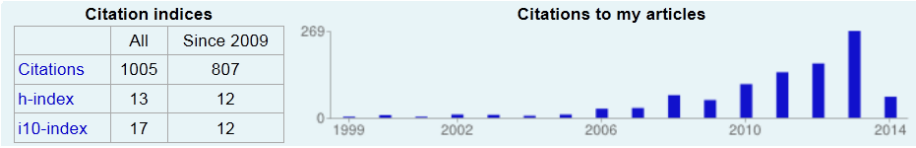
Abbreviated abstracts/descriptions of some of the journals and articles, grouped by journal (ordered by the impact factor[1]) for the last several years (2005-2014) of research output.

Almost all of my articles were published in collaboration with a group of medical researchers at the University of South Florida. I am always the only mathematician (sometimes we have a statistician) in the team. Therefore, I am the one that usually develops the theoretical mathematical background for the model and the analytical, statistical, simulation, or programming tools we need to understand the problem. The medical researchers usually introduce a variety of model variables and specific concepts and topics/goals to investigate. Whenever you look at any of the papers we published and see a graph, a tree diagram, a mathematical formula or a result of a mathematical simulation – I was heavily involved in producing that part of the project.



JAMA The Journal of the American Medical Association

JAMA is the most widely circulated medical journal in the world published continuously since 1883. *JAMA's* **2012 impact factor is 29.978**. *JAMA's* acceptance rate is approximately 9% of the nearly 6000 solicited and unsolicited manuscripts it receives annually.

1. Soares HP, Kumar A, Daniels S, Swann S, Cantor A, **Hozo I**, Clark M, Serdarevic F, Gwede C, Trotti A, Djulbegovic B "Evaluation of New Treatments in Radiation Oncology: Are They Better Than Standard Treatments?" JAMA (Journal of the American Medical Association) 293.8 (2005) 970-78. **Number of Citations[2]:58**
   The same issue of JAMA also contained an editorial addressing our article titled "The Case for Randomized Trials in Cancer Treatment. New Is Not Always Better" by A. Grann and V. Grann.
   Abstract The superiority of innovative over standard treatments is not known. To describe accurately the outcomes of innovations that are tested in randomized controlled trials (RCTs) 3 factors have to be considered: publication rate, quality of trials, and the choice of the adequate comparator intervention. We determined the success rate of innovative treatments by assessing preferences between experimental and standard treatments according to original investigators' conclusions, determining the proportion of RCTs that achieved primary outcomes' statistical significance, and performing meta-analysis to examine if the summary point estimate favored innovative vs standard treatments. We found that the results in individual trials cannot be predicted in advance indicating that the system and rationale for RCTs is well preserved and that successful interventions can only be identified after an RCT is completed.
2. Djulbegovic B, **Hozo I**, Ioannidis JA. "Improving the drug development process: more not less randomized trials" JAMA. 2014; 311(4):355-356. doi:10.1001/jama.2013.283742
   Abstract Peer-reviewed opinion piece arguing that "The drug development process could be substantially improved if rigorous randomized trials become the first rather than the last step in the process of discovery of new, effective drugs and if randomization permeates testing at all stages."

JOURNAL OF CLINICAL ONCOLOGY Official Journal of the American Society of Clinical Oncology

The **Journal of Clinical Oncology** (JCO) is published by the American Society of Clinical Oncology (ASCO), **with a 2012 impact factor of 18.038**. JCO now accounts for nearly one in 10 of all oncology journal citations.

3. **Stem Cell Trialists Group**[3]. "Allogeneic Peripheral Blood Stem Cell Transplant vs. Bone Marrow Transplant in the Management of Hematological Malignancies: An Individual Patient Data Meta-Analysis of 9 Randomized Trials." Journal of Clinical Oncology. 23.22 (2005): 5074-87; **Number of Citations: 33[4]**
   Abstract: To provide the totality of research evidence related to the effects of PBSCT versus BMT, we conducted an individual-patient data meta-analysis using data from nine randomized trials enrolling 1,111 adult patients. I developed the individual patient meta-analysis algorithms from scratch in statistical software STATA.

BMJ

The BMJ (British Medical Journal) is an international peer reviewed medical with a long history and has been published without interruption since 1840, when it began as the Provincial Medical and Surgical Journal. **The BMJ's Impact Factor is 17.215 (2012)**.

4. Kumar A, Soares PH, Wells R, Clarke M, **Hozo I**, Bleyer A, Reaman G, Chalmers I, and Djulbegovic B, "Are experimental treatments for cancer in children superior to established treatments? Observational study of randomised controlled trials by the Children's Oncology Group", British Medical Journal 2005; 331; 1295 BMJ, doi:10.1136/bmj.38628.561123.7C (published 18 November 2005).. **Number of Citations: 47**
   The same issue of British Medical Journal also contained an editorial addressing our article titled: "In praise of uncertainty" by F. Godlee.

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[1] The impact factor is a measure of citation rate per article, and is calculated by dividing one years' worth of citations to a journal's articles published in the previous two years by the number of major articles [e.g., research papers, reviews] published by that journal in those two years. For most of the journals – the last year the impact factor was calculated is 2012.

[2] All citations counts were found on Google Scholar. If the number of citations is 0 (zero), the phrase "Number of Citations" was omitted.

[3] I am a member of this group.

[4] according to JCO's archives – couldn't find it on Google Scholar

Abstract: To assess how often new treatments for childhood cancer assessed in phase III randomized trials are superior or inferior to standard treatments and whether the pattern of successes and failures in new treatments is consistent with uncertainty being the ethical basis for enrolling patients in such trials. 126 trials were included, involving 152 comparisons and 36 567 patients. The results indicated that new treatments are as likely to be inferior as they are to be superior to standard treatments. This result was not affected by publication bias, methodological quality, treatment type, disease, or comparator.

PLOS Medicine is the leading open-access medical .According to the Journal Citation Reports, the journal had a **2012 impact factor of 15.253**, ranking it 5th out of 151 journals in the category "Medicine, General & Internal".

5. Djulbegovic B, **Hozo I**. "When should potentially false research findings be considered acceptable?", PLoS Med. 2007 Feb;4(2):e26. **Number of Citations: 31**
   Abstract: We combined our two previously published models to calculate the probability above which research findings may become acceptable. A new model indicates that the probability above which research results should be accepted depends on the expected payback from the research (the benefits) and the inadvertent consequences (the harms). This probability may dramatically change depending on our willingness to tolerate error in accepting false research findings. Our acceptance of research findings changes as a function of what we call "acceptable regret," i.e., our tolerance of making a wrong decision in accepting the research hypothesis.

JAMA Internal Medicine (formerly the **Archives of Internal Medicine**) is an international peer-reviewed journal with acceptance rate of approximately 12%. **Current impact factor is 10.58.**

6. Djulbegovic B, Kumar A, Soares HP, **Hozo I**, Bepler G, Clarke M, Bennett CL, "Treatment Success in Cancer. [New Cancer Treatment Successes Identified in Phase III randomized controlled trials conducted by the National Cancer Institute -sponsored Cooperative Oncology Groups: 1955-2000]", Archives Of Internal Medicine [Arch Intern Med], ISSN: 0003-9926, 2008 Mar 24; Vol. 168 (6), pp. 632-42. **Number of Citations: 44**
7. Djulbegovic B, Kumar A, Bepler G, Clarke M, Soares HP, **Hozo I**, Bennett CL. Treatment success in cancer-reply. Arch Intern Med 2008;168:2173-2174
   Abstract: The evaluation of research output, such as estimation of the proportion of treatment successes, is of ethical, scientific, and public importance but has rarely been evaluated systematically. We assessed how often experimental cancer treatments that undergo testing in randomized clinical trials (RCTs) result in discovery of successful new interventions. Data from 624 trials (781 randomized comparisons) involving 216 451 patients were analyzed. In all, 30% of trials had statistically significant results, of which new interventions were superior to established treatments in 80% of trials. Approximately 25% to 50% of new cancer treatments that reach the stage of assessment in RCTs will prove successful.
8. Djulbegovic B, **Hozo I**, Lyman GH, "Estimating net benefits and harms of screening mammography in women age 40-49", Annals Of Internal Medicine [Ann Intern Med], ISSN: 1539-3704, 2007 Dec 18; Vol. 147 (12), pp. 882
   Number of Citations: 3
   Content: This was a short letter explaining how to use benefits/harms data in the national discussion on policy of administering screening mammography tests to all women of a certain age.

Haematologica/The Hematology Journal publishes articles across all areas of experimental and clinical hematology. Ranking 6th journal in hematology category. **Impact Factor: 5.935.**

9. Kumar A, List A, **Hozo I**, Komrokji R, Djulbegovic B, "Decitabine versus 5-azacitidine for the treatment of myelodysplastic syndrome: adjusted indirect meta-analysis", Haematologica 2009; 94: doi: 10.3324/haematol.2009.017764. **Number of Citations: 12**
   Content: This is a short (refereed) letter to the editor commenting on a published article and adding another dimension totheir argument and several other trials for a meta-analytical publication.

The **Journal of Clinical Epidemiology** is a peer-reviewed journal with **an Impact Factor of 5.332** and is ranked 6th of 158 journals in the Public, Environmental & Occupational Health category.

10. Djulbegovic B, **Hozo I**, at all. "Optimism bias leads to inconclusive results - an empirical study", J Clin Epidemiol 2011 Jun, 64:583-93 **Number of Citations: 13**
    Abstract: We assessed the impact of optimism bias on a proportion of trials that did not answer their research question successfully, and explored whether poor accrual or optimism bias is responsible for inconclusive results using a systematic review of 359 trials (374 comparisons) enrolling 150,232 patients. We concluded that formal statistical inference is sufficient to answer the research question in 75% of RCTs. The answers to the other 25% depend mostly on subjective judgments, which at times are in conflict with statistical inference. Optimism bias significantly contributes to inconclusive results.
11. Miladinovic B, Kumar A, Mhaskar R, Georgiev H, **Hozo I**, Djulbegovic B. "Optimal information size in trial sequential analysis of time-to-event outcomes reveals potentially inconclusive results due to the risk of random error" J Clin Epidemiol. (2013) Jun;66(6):654-9.. **Number of Citations: 2**
    Abstract: The current approach for evaluating the risk of random error in meta-analyses (MAs) using trial sequential analysis (TSA) can accommodate binary and continuous data but not time-to-event data. We developed a new method and applied our method in MAs for treatments of multiple myeloma and compared our results with published "standard analyses". We concluded that our new method demonstrates the possibility of incorporating time-to-event outcomes into TSA and reveals that some already published MAs have potentially inconclusive results.

12. John P.A. Ioannidis, **Iztok Hozo**, Benjamin Djulbegovic, "Optimizing type I and II error pairs for research inferences", J Clin Epidemiol. (2013) Aug;66(8):903-910. **Number of Citations: 2**
Abstract: To model how to select the optimal pair of type I and II errors that maximize study value when there are constraints on the available study sample size. Correct inferences (true positives, true negatives) increase and wrong inferences (false positives, false negatives) decrease the value of a study. We model the composite value of a study based on these 4 inferences, their relative importance, and relative frequency using variable multiplicative and additive models.

Breast Cancer Research and Treatment provides the surgeon, radiotherapist, medical oncologist, endocrinologist, epidemiologist, immunologist or cell biologist investigating problems in breast cancer a single forum for communication. **2012 Impact Factor: 4.469**

13. Herold CI, Djulbegovic B, **Hozo I**, Lyman GH, "Reliable data on 5- and 10-year survival provide accurate estimates of 15-year survival in estrogen receptor-positive early-stage breast cancer." Breast Cancer Res Treat. Volume 121, (2010) Number 3, 771-776, DOI: 10.1007/s10549-009-0564-1 **Number of Citations: 2**
Abstract: Utilizing Early Breast Cancer Trialists' Collaborative Group (EBCTCG) data, a Markov model was generated to model 15-year survival showing that reliable early survival data may be used to generate models that accurately estimate 15-year survival in ER-positive ESBC.

The American Journal of Hematology publishes original contributions in non-malignant and malignant hematological diseases including clinical and basic studies in hemostasis and thrombosis, immunology, blood banking, and stem cell biology. **Impact Factor: 4.138**

14. Kumar A, **Hozo I**, Wheatley K, Djulbegovic B, "Thalidomide versus bortezomib based regimens as first-line therapy for patients with multiple myeloma: a systematic review." Am J Hematol 2011 Jan, 86:18-24 **Number of Citations: 21**
Abstract: Direct head-to-head comparison of Melphalan, Prednisone plus Bortezomib (MPB) versus Melphalan, Prednisone plus Thalidomide (MPT) is lacking. We developed methods, software and performed an indirect meta-analysis to assess the treatment effects of MPB versus MPT indirectly, using six randomized controlled trials (RCTs) enrolling 2,798 patients.

PLOS ONE is an open access peer-reviewed scientific journal published by the Public Library of Science since 2006. It covers primary research from any discipline within science and medicine The PLoS ONE online platform has post-publication user discussion and rating features. **2012 Impact Factor 3.730**

15. Tsalatsanis A, Barnes L, **Hozo I**, Skvoretz J, Djulbegovic B, (2011) "A social network analysis of treatment discoveries in cancer", PLoS ONE 6(3): e18060., doi:10.1371/journal.pone.0018060. **Number of Citations: 1**
Abstract: We use social network analysis to study the impact of interactions between RCTs on treatment success. Our dataset consists of 280 phase III RCTs conducted by the NCI from 1955 to 2006. The RCT networks are formed through trial interactions formed i) at random, ii) based on common characteristics, or iii) based on treatment success. We analyze treatment success in terms of survival hazard ratio as a function of the network structures. We conclude that the chances of discovering life-saving treatments are directly related to the richness of social interactions between researchers.
16. Djulbegovic B, Kumar A, Miladinovic B, Reljic T, Galeb S, Mhaskar A, Mhaskar R, **Hozo I**, Tu D, Stanton HA, Booth CM, Meyer RM. "Treatment Success in Cancer: Industry versus Publicly Sponsored Randomized Controlled Trials - A Systematic Review", PLoS One. (2013);8(3):e58711. doi: 10.1371/journal.pone.0058711. Epub 2013 Mar 21 **Number of Citations: 2**
Abstract: We undertook a systematic review of all consecutive, published and unpublished phase III cancer randomized controlled trials (RCTs) conducted by GlaxoSmithKline (GSK) and the NCIC Clinical Trials Group (CTG). While overall industry sponsorship is associated with higher success rates than publicly-sponsored trials, the differences seems to have disappeared over time.
17. Zulfiqar F, **Hozo I**, Rangarajan S, Mariuzza R.A., Dziarski R, Gupta D. "Genetic association of peptidoglycan recognition protein variants with inflammatory bowel disease", PLoS One. (2013) Jun 19;8(6):e67393.
Abstract: We tested the hypothesis that genetic variants in four Peptidoglycan recognition proteins (PGLYRP) genes associate with Crohn's disease (CD) and/or ulcerative colitis (UC) and with gender and/or age of onset of disease in the patient population. We identified 16 polymorphisms in the four PGLYRP genes that significantly associated with CD, UC, and/or subgroups of patient populations. Of the 16, 5 significantly associated with both CD and UC, 6 with CD, and 5 with UC. Our data demonstrate that genetic variants in PGLYRP genes associate with CD and UC and may provide a novel insight into the mechanism of pathogenesis of IBD.

Bone Marrow Transplantation publishes high quality, peer reviewed original research on basic biology and clinical use of haemopoietic stem cell transplantation. **2012 Impact Factor 3.541**

18. **Stem Cell Trialists Group**[3]. "Individual patient data meta-analysis of allogeneic peripheral blood stem cell transplant vs. bone marrow transplant in the management of hematological malignancies: indirect assessment of the effect of day 11 methotrexate administration." Bone Marrow Transplant 2006; 38:539-546. **Number of Citations: 14**

Seminars in Hematology is a topical journal (Elsevier) that focuses on subjects of current importance in clinical hematology and related fields. **Impact Factor: 3.357**

19. **Hozo I**, Schell MJ, Djulbegovic B. "Decision-making when data and inferences are not conclusive: risk-benefit and acceptable regret approach." Semin Hematol 2008;45:50-159 **Number of Citations: 12**

Abstract: This article illustrates the rational choice of a research hypothesis using Risk – Benefit analysis based on decision-theoretic expected utility theory framework and the concept of "acceptable regret" to calculate the threshold probability of the "truth" above which the benefit of accepting a research hypothesis outweighs its risks.

Medical Decision Making

***Medical Decision Making* (*MDM*)** is a peer-reviewed journal ranked 4th out of 23 in Medical Informatics and 12th out of 82 in Health Care Sciences. **Impact Factor: 2.890**.

20. **Hozo I**, Djulbegovic B, "When is diagnostic testing inappropriate or irrational? Acceptable regret approach", Med Decis Making 2008;28:540-553. **Number of Citations: 21**
21. **Hozo I**, Djulbegovic B, "Will insistence on practicing medicine according to expected utility theory lead to an increase in diagnostic testing? Reply to Dekay's commentary : Physicians' anticipated regret and diagnostic testing.", Med Decis Making 2009;29:320-324**. Number of Citations: 9**
    Abstract: The authors provide a new model within the framework of theories of bounded rationality for the observed physicians' behavior that their ordering of diagnostic tests may not be rational. Contrary to the prevailing thinking, the authors find that physicians do not act irrationally or inappropriately when they order diagnostic tests in usual clinical practice. When acceptable regret (i.e., regret that a decision maker finds tolerable upon making a wrong decision) is taken into account, the authors show that physicians tend to order diagnostic tests at a higher level of pretest probability of disease than predicted by expected utility theory. Finally, they explain variations in the practice of medicine.
22. Djulbegovic B, Beckstead J, Elqayam S, Reljic T, **Hozo I**, Kumar A, Cannon-Bowers J, Taylor S, Tsalatsanis A, Turner B, Paidas C, "Evaluation of physicians' cognitive styles", accepted (2014), Medical Decision Making
    Abstract: We report the first study of cognitive styles in physicians. In general, those capable of suppressing immediate intuitive response to the question and those scoring higher on rational thinking made fewer inferential mistakes. We found a negative correlation between age and maximizing: as they advanced in their career, physicians are less willing to spend time and effort in exhaustive search for solutions.

BMC Medical Research Methodology

BMC Medical Research Methodology is an open access, peer-reviewed journal whose open access policy allows maximum visibility of articles published in the journal as they are available to a wide, global audience. **Journal's impact factor is 2.21.**

23. Pudar Hozo S, Djulbegovic B, **Hozo I**, "Estimating the mean and variance from the median, range, and the size of a sample." BMC Medical Research Methodology 5:13 (2005)**. Number of Citations: 524**[5]
    Abstract: Usually the researchers performing meta-analysis of continuous outcomes from clinical trials need their mean value and the variance (or standard deviation) in order to pool data. However, sometimes the published reports of clinical trials only report the median, range and the size of the trial. In this article we use simple and elementary inequalities and approximations in order to estimate the mean and the variance for such trials. Our estimation is distribution-free, i.e., it makes no assumption on the distribution of the underlying data. We found two simple formulas that estimate the mean using the values of the median (*m*), low and high end of the range (*a* and *b*, respectively), and *n* (the sample size). Using these formulas, we hope to help meta-analysts use clinical trials in their analysis even when not all of the information is available and/or reported.
24. **Hozo I**, Djulbegovic B, Clark O and Lyman G, "Use of re-randomized data in meta-analysis" BMC Medical Research Methodology 5:17 (2005)**. Number of Citations: 4**
    Abstract: We developed a method to estimate the relative error in the risk differences with and without re-randomization of the patients. Our method should be helpful in the understanding of the results of clinical trials and particularly helpful to the meta-analysts to assess if re-randomized patient data can be used in their analyses.
25. Miladinovic B, Kumar A, **Hozo I** and Djulbegovic B, "Instrumental variable meta-analysis of individual patient data: application to adjust for treatment non-compliance" BMC Medical Research Methodology 2011, 11:55
    Number of Citations: 3
    Abstract: Intention-to-treat (ITT) is the standard data analysis method which includes all patients regardless of receiving treatment. Although the aim of ITT analysis is to prevent bias due to prognostic dissimilarity, it is also a counter-intuitive type of analysis as it counts patients who did not receive treatment, and may lead to "bias toward the null." As treated (AT) method analyzes patients according to the treatment actually received rather than intended, but is affected by the selection bias. Our objective is to correct for bias in non-experimental data from previously published individual patient data meta-analysis by applying Instrumental Variable methods.
26. Djulbegovic B, **Hozo I.** "When is it rational to participate in a clinical trial? a game theory approach incorporating trust, regret and guilt", BMC Medical Research Methodology 2012, 12:85 **Number of Citations: 2**
    Abstract: Randomized controlled trials (RCTs) remain an indispensable form of human experimentation as a vehicle for discovery of new treatments. We employed the trust version of the prisoner's dilemma since interaction between the patient and researcher in the setting of a clinical trial is inherently based on trust. We also took into account that the patient may have regretted his/her decision to participate in the trial, while a researcher may feel guilty because he/she abused the patient's trust. We found that under typical circumstances of clinical research, most patients can be expected not to trust researchers, and most researchers can be expected to abuse the patients' trust. The most significant factor determining trust was the success of experimental or standard treatments, respectively. The more that a researcher believes the experimental treatment will be successful, the more incentive the researcher has to abuse trust.

[5] I did the simulations, Stela developed the statistical formulas (and she never lets me forget that!)

BMC Medical Informatics and Decision Making is an open access, peer-reviewed journal. **Current Impact Factor is 1.60.**

27. Tsalatsanis A, **Hozo I,** Vickers A and Djulbegovic B, "A regret theory approach to decision curve analysis: A novel method for eliciting decision makers' preferences and decision-making", BMC Medical Informatics and Decision Making 2010, 10:51doi:10.1186/1472-6947-10-51. **Number of Citations: 20**

Abstract We use the cognitive emotion of regret to serve as a link between intuition (system 1), and analytical, deliberative process (system 2) and to reformulate Decision curve analysis (DCA). Based on the concept of acceptable regret we identified the circumstances under which a decision maker tolerates a potentially wrong decision and expressed it in terms of probability of disease. We present a novel method for eliciting decision maker's preferences and an alternative derivation of DCA based on regret theory.

28. Athanasios Tsalatsanis, Laura E Barnes, **Iztok Hozo** and Benjamin Djulbegovic, "Extensions to Regret-based Decision Curve Analysis: An application to hospice referral for terminal patients", BMC Medical Informatics and Decision Making 2011, 11:77 **Number of Citations: 3**

Abstract We present a novel theoretical framework that is based on well-established methodologies of prognostication and decision analysis to assist with the hospice referral process for terminally ill patients. We present a theoretical framework to facilitate the hospice referral process.

29. Djulbegovic B, **Hozo I**, Beckstead J Tsalatsanis A, Pauker GS. "Dual processing model of medical decision-making", BMC Medical Informatics and Decision Making.2012, 12:94 **Number of Citations: 6**

Abstract Dual processing theory of human cognition postulates that reasoning and decision-making can be described as a function of both an intuitive, experiential, affective system (system I) and/or an analytical, deliberative (system II) processing system. To date no formal descriptive model of medical decision-making based on dual processing theory has been developed. Here we postulate such a model and apply it to a common clinical situation: whether treatment should be administered to the patient who may or may not have a disease. We developed a mathematical model in which we linked a recently proposed descriptive psychological model of cognition with the threshold model of medical decision-making and show how this approach can be used to better understand decision-making at the bedside and explain the widespread variation in treatments observed in clinical practice.

Contemporary Clinical Trials is an international peer reviewed journal that publishes manuscripts pertaining to all aspects of clinical trials, including, but not limited to, design, conduct, analysis, regulation and ethics. Manuscripts submitted should appeal to a readership drawn from disciplines including medicine, biostatistics, epidemiology, computer science, management science, behavioral science, pharmaceutical science, and bioethics. **Impact Factor: 1.597**

30. Miladinovic B, Kumar A, **Hozo I**, Djulbegovic B. "Trial sequential analysis may be insufficient to draw firm conclusions regarding statistically significant treatment differences using observed intervention effects: A case study of meta-analyses of multiple myeloma trials." Contemporary Clinical Trials 34 (2013) 257–261 **Number of Citations: 2**

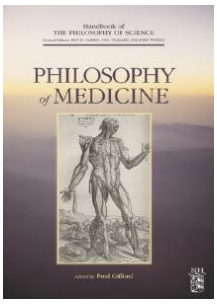
Abstract: Trial sequential analysis (TSA) has been proposed as a method to assess the risk of random error in cumulative meta-analysis (MA), which increases due to repeated significance testing. We present empirical evidence from a recent systematic review to demonstrate that the use of TSA may lead to a premature declaration of statistically significant treatment difference, when further accumulated evidence suggested otherwise.

The Stata Journal is a quarterly publication containing articles about statistics, data analysis, teaching methods, and effective use of Stata's language. The Journal publishes reviewed papers together with shorter notes and comments, regular columns, book reviews, and other material of interest to researchers applying statistics in a variety of disciplines. **Impact Factor: 1.31**

31. Miladinovic B, **Hozo I**, B Djulbegovic. "Trial sequential boundaries for cumulative meta-analysis. " The Stata Journal, 2013; 13(1), pp 1-15. **Number of Citations: 2**

Abstract: This is a technical article explaining our method and its implementation in the statistical package STATA.

32. Djulbegovic B, **Hozo I**, Greenland S, "Uncertainty in Clinical Medicine", Encyclopedia of Medical Philosophy;, edited by Gifford F, Elsevier (2011). In: Dov M. Gabbay and John Woods, editors, Handbook of The Philosophy of Science: Philosophy of Medicine. San Diego: North Holland, 2011, pp. 299-356.



Number of Citations: 9

Content: This is a book chapter in which we provide an overview and analysis of the uncertainty in medicine and the theories that have been put forward to understand it. We describe a variety of theories, means of measurement, and areas of empirical work about this topic, and in each case, one or more medical cases which illustrate how the uncertainty can be or has been applied to medical reasoning or medical problems. Finally, we consider some of the implications of this discussion for how uncertainties need to be managed, how they need to be communicated to patients, and what sort of training is appropriate for health care professionals who will be dealing with these phenomena of uncertainty.