

Doi: 10.26529/cepsj.1679

Tina Štemberger, *Še ena knjiga o statistiki: Univariatne in bivariatne statistične metode v edukaciji*, Založba Univerze na Primorskem, 2021: ISBN 978-961-293-101-8

Reviewed by ŽAN KOROŠEC¹

With regard to the monograph – or better yet manual – that is reviewed here, one could assert that it focuses on bringing statistical analysis within a range that is accessible and directly applicable to university students, thus constituting the latter as its primary audience. By way of introduction, we could venture the generalisation that, at some point during their education, students familiarise themselves with research methods, techniques, instruments, etc., in which data analysis is undoubtedly an indispensable aspect. Even though this topic is lectured and thus exemplified, it is often accompanied by a scarcity of suitably adapted reference materials: although statistical compendiums, proceedings, encyclopaedias and other sources are ubiquitous and profuse, not many are tailored to the specific needs of a certain discipline, eliminating the redundant ballast and offering what is required. While the present publication is not the only one of its kind, it is one of the most recent works in the Slovenian language that targets students of pedagogical programmes, offering them tactile tools to employ in their own pursuits.

It is evident both from the title and the content that emphasis is placed on the most frequent univariate (involving one variable) and bivariate (incorporating two variables) procedures. This is a logical limitation – after all, selection needs to be bound by something, and in this case it is by the number of variables concurrently considered – and other similar reference texts² have



¹ Faculty of Education, University of Ljubljana, Slovenia; zan.korosec@pef.uni-lj.si.

² See for example: B. Kožuh. (2000). *Statistične obdelave v pedagoških raziskavah*. FF UL, Oddelek za pedagogiko in andragogiko; M. Cenčič. (2009). *Kako poteka pedagoško raziskovanje: Primer kvantitativne empirične neeksperimentalne raziskave*. Zavod RS za šolstvo; B. Kožuh and J. Vogrinc. (2011). *Obdelava podatkov*. ZZFF; T. Štemberger. (2016). *Univariatne in bivariatne statistične metode v edukaciji*. Založba Univerze na Primorskem; T. Štemberger. (2020). *Uvod v pedagoško raziskovanje*. Založba Univerze na Primorskem.

done exactly the same. Briefly, the text addresses: *descriptive statistics* (measures of central tendency, dispersion, distribution), *correlation coefficients*, *chi-square for goodness of fit test*, *chi-square test of independence*, *normality testing*, *t-tests and one-way ANOVA* (along with nonparametric alternatives), and *reliability analysis* (via Cronbach α). Although we fully understand that by increasing the number of tests the handbook would become less relevant for the target students, our reservation applies to introducing and consequently explaining factor analysis, multiple regression, multiple analysis of variance and covariance, precisely because these methods are often theoretically presented, but not practically applied.³ For example, certain undergraduate programmes introduce the concept of factor analysis in connection with characteristics of measurement, whereby students are typically instructed to devise a research plan with accompanying instruments without fully knowing how to implement their design or verify the quality of their apparatuses. Let this serve as background information or, better still, as a justification why some multivariate procedures could have been incorporated without forfeiting the relevancy to its end users.

Although the purpose of the monograph, as indicated in the preface, is to equip students with knowledge about statistical procedures, it is clearly stated that it is also intended to demonstrate how to use IBM SPSS, statistical software widely employed in the social sciences. The use of SPSS (or to its free alternative PSPP⁴) is prevalent in pedagogical methodology and statistics. As well as being referred to in other works, it also coincides with tertiary education syllabi of several faculties, e.g., the University of Ljubljana's Faculty of Education uses SPSS almost exclusively to instruct students of bachelor, masters and doctoral levels. We can therefore argue that the stated goal "that as a user of SPSS and various statistical methods, [the student] would be able to do their best in their use and applicability" (p. 13) is realised and the promise that the handbook is "distinctly adapted to their [students'] needs, especially to students of second-level programmes in the field of initial teacher education" (ibid.) is fulfilled. The mode of achievement is as follows: statistical procedures are presented in relation to the level of measurement (i.e., nominal, ordinal, interval, ratio), ergo, what can be performed for attributive and numerical variables or for a combination of the two. Thus, it progresses from a variable type and number of variables to a number of independent samples, using the latter to establish a distinction between t-tests and analysis of variance (and their

3 This statement, like the book itself, applies to Slovenian contexts and is in no way regarded as the only possible outcome.

4 In 2015, B. Kožuh wrote *Statistične metode in program PSPP*, and later in 2020 published on his website *Obdelava podatkov s programom PSPP*, detailing the differences and otherwise demonstrating that it is sufficient for domestic use, including seminar, research, graduate theses.

nonparametric alternatives). Not only is everything described, it is also outlined in several diagrams, all designed to aid comprehension and not to convolute the otherwise exact order. A few pages later, instructions are added on how to analyse or obtain something from SPSS; however, it details mostly the path, and rarely touches upon the extra options whose output frequently assumes a major role in interpretation.

In the following pages, the above procedures are nonetheless explained in terms of usage conditions and situations, annotated and interpreted. The core and paramount contribution, however, is the exercises. Due to the latter, the publication cannot be considered a prototypical example of manuals, as it operates in the vicinity of textbooks, first clarifying the content, then offering sets of tasks with which the reader can improve their statistical knowledge. Screenshots and hints are abundant, and gradation in difficulty is maintained as well: students are initially required to interpret tables and spreadsheets that are already edited, but once they reach Part Two of the textbook, independent use of SPSS with complementary analysis is expected. These tasks are based on data that has been gathered with a Slovenian version of the questionnaire *Career Development Scale, Career Choice Scale and Career Development Scale* (p. 27), which was adjusted and validated in a separate study. Part Two of the textbook therefore “relies on data obtained with the said questionnaire [...], where you need to copy and interpret the necessary information, then find commands for statistical tests yourselves via ‘hints’ and screen captures, as well as transcribing and interpreting these results” (p. 63). It is stated that “the data are in an attachment in e-form” (ibid.), which is somewhat problematic seeing that this file is nowhere to be found. We contacted the publisher,⁵ who said this particular textbook never had any official supplements, but that they might have been disseminated by the author upon publication, additionally urging us to contact the author directly. Naturally, we did so, but no reply had been received by the time this review was offered for recension. It is rather inconvenient to have a task like “*Enter the necessary results in Table 11.1 for the variable ‘Length of service’ and explain them*” (p. 67), if you cannot access and thus operate with said database. Being in a state of uttermost perplexity, we started contemplating this conundrum and speculating whether the textbook is in fact not intended for students of pedagogical programmes *per se*, but rather for the author’s students, with whom SPSS and its applications could be tackled in lectures, classes, seminars, etc. where the “missing attachment” is made available as a part of

5 We did so on 31 May 2023, both via email (zalozba@upr.si) and phone (by first calling the University of Primorska directly, which connected us with the publisher, i.e., *University of Primorska Press*).

the course materials. Nevertheless, this is just our conjecture about the probable cause of absent materials. Another flaw, albeit a minor one, we feel obliged to expose is that of incongruence between the preface and the actual body of the text. The preface claims that Part Two details application possibilities and restrictions, while Part Three features exercises. In fact, Part One discloses and illustrates statistical procedures, Part Two contains exercises, and Part Three presents ways of further data customisation and editing. In our opinion, this discrepancy has no particular effect on the reading process, unless you fixate on the preface. It should, of course, be consistent, but fortunately it does not hinder comprehension.

To recapitulate, the textbook provides more than just SPSS commands or a manual to using SPSS software, as it elucidates frequently employed procedures succinctly and in a way that is relevant to students training to become teachers or other education professionals. Although a significant portion is somewhat restricted in terms of realisation, as not all of the tasks can be completed due to the missing database, the rest of textbook still presents enough content to explain, exemplify and equip the readers with new skills.