

Metsämuuronen, J. (2017). *Essentials of Research Methods in Human Sciences. Vol. 3: Advanced Analysis*. SAGE Publications, Inc.

Volume 3 is divided into five sections comprising a selection of important methods which usually are not included in the university courses because of lack of time.

The first section, *Basics of Non-Parametric Statistics*, is the other large entity on the side of Section II in Volume 2. This section introduces the most classical methods for *small-, sparse-, or non-normal datasets* with approximating and exact testing. The methods are divided on the basis of the sample: the methods for one sample, related samples and independent samples. Additionally, there are methods for testing the connection of ordinal or nominal datasets. Though the content of this section is supposedly neglected in many cases in the standard courses of the research methodology, they are very important. Namely, in many cases, the datasets are not proper for the classical parametric analysis based on the Normal approximation. The non-parametric alternatives should then be used.

The second section, *Basics of Experimental Research in Human Sciences*, concentrates on different research designs: experimental, quasi-experimental and pre-experimental designs and their analysis. In addition to analyzing the datasets from the *classical experimental designs*, in this section, the reader is also led to analyze the *quasi-experimental designs*, which is very rare in these kinds of books for the basic level. These designs are, however, very often used in the human sciences because of the willing to administer the experiments in the real life situations instead of laboratories. However, it is rare to find practical guides on how to analyze the datasets from quasi-experiments.

The third section, *Basics of Multilevel Modeling*, concentrates on one of those new areas in the research fields which have become, somewhat, the standard in analyzing the samples collected with the clustered sampling from different organizations (such as schools), when knowing that the units (e.g. students) are connected with each other. In the case, the standard methods that are based on the random sampling would produce biased results, which in some cases may drastically differ from the real one. In this section, three software are introduced and compared: HML, MLwiN, and SPSS.

The fourth section, *Basics of SEM and Path Modeling in AMOS environment*, concentrates on another new area in the research fields, which have become somewhat standard in analyzing the correlational datasets and validating the theories. SEM analysis includes both measurement models, structural equation models and Path models. The AMOS software is used to illustrate the results.

The final fifth section, *Basics of Survival Analysis*, introduces the reader to a family of methods that are used frequently in the medical research, though they

can, of course, also be used in a wider context. With the survival analysis, it is possible to analyze datasets with, for example, dropouts. Three methods are introduced: life tables, Cox regression, and *Kaplan-Meyer method*. This section differs from the others in the respect that there are two responsible writers, professor of biostatistics Seppo Sarna from University of Helsinki, and I. The text is based on Sarna's original draft, which was totally rewritten and revised with new examples by Jari Metsämuuronen.

All the methods are introduced from five perspectives:

- 1) the situation that the method is the best for, or *suitability* of the method,
- 2) the assumptions and limits of the method,
- 3) a brief overview for the theory and concepts of the method,
- 4) additional tests or further analysis that *should* be used or that *can* be used with each method, and
- 5) the technical execution and interpretation in SPSS environment – or some other relevant environment such as AMOS, MLwiN, or HLM software.

The sections concerning theory and concepts might seem somewhat heavy for those who are not professional of mathematics or statistics. However, there is no need to learn the matters by heart; the important thing is that they are available when needed. The point is how to *do* the analysis and to *interpret* the results.