

**Bandemer, Hans; Näther, Wolfgang**

**Fuzzy data analysis.** (English) Zbl 0758.62003

*Theory and Decision Library. Series B: Mathematical and Statistical Methods.* 20. Dordrecht etc.: Kluwer Academic Publishers. xii, 341 p. (1992).

The book deals with fuzzy data analysis, i.e. the uncertainty of the data is modelled using fuzzy set theory. The book is not intended as a review of existing fuzzy techniques in data analysis, but rather it emphasizes methods used by the authors and co-workers in solving practical problems. For related material see also the recent books by *R. Kruse* and *K. D. Meyer* [Statistics with vague data. (1987; [Zbl 0663.62010](#))] and *J. Kacprzyk* and *M. Fedrizzi* (eds.) [Fuzzy regression analysis, Warsaw (1992)].

The first four chapters are a setup for the book. First, the authors give a general description of data analysis and then follows a review of notions and methods in fuzzy set theory, which are needed in the sequel. Chapter 3 includes a review of some classical statistical methods. Chapter 4 discusses one of the main points of the book: what is a fuzzy data, where does it come from, how to model it. Finally, a collection of operations for different kinds of fuzzy data are presented.

Chapter 5 is devoted to qualitative data analysis, i.e. the data is analyzed as such without any reference to an underlying model. Main tools in this chapter are different kinds of fuzzy clustering methods based on certain concepts of similarity. As fuzzy sets are a flexible tool, the adaptation of statistical methods into a fuzzy environment is not necessarily trivial. As pointed out by the authors: “In general, loans from mathematical statistics demand for new motivation when used in an environment of fuzzy data analysis. If the “mathematical-statistics- approach” is combined in an eclectic manner scepticism is advisable, since its utility has turned out to be questionable”.

In Chapter 6 the authors analyze the data in terms of a parametric model and finally, in Chapter 7, they give some preliminary ideas of a normative theory of a fuzzy data analysis, i.e. how to evaluate the results obtained.

The book is not a book of recipes, but rather a source of ideas how and why to use fuzzy set theory in data analysis. It follows that it contains “a little bit of everything”, so that the reader has to consult original papers to see how the methods are actually applied. In conclusion I think that this book is a valuable addition to the literature on applications of fuzzy sets.

Reviewer: [O.Kaleva \(Tampere\)](#)

**MSC:**

62-07 Data analysis (statistics) (MSC2010)

62-02 Research exposition (monographs, survey articles) pertaining to statistics

03E72 Theory of fuzzy sets, etc.

Cited in **24** Documents

**Keywords:**

[qualitative data analysis](#); [fuzzy clustering methods](#); [concepts of similarity](#); [parametric model](#)