Statistical Analysis of Clinical Data on a Pocket Calculator

Ton J. Cleophas • Aeilko H. Zwinderman

Statistical Analysis of Clinical Data on a Pocket Calculator

Statistics on a Pocket Calculator

Springer

Prof. Ton J. Cleophas
Department of Medicine
Albert Schweitzer Hospital
Dordrecht, The Netherlands
and
European College of Pharmaceutical
Medicine, Lyon, France
ajm.cleophas@wxs.nl

Prof. Aeilko H. Zwinderman
Department of Epidemiology
and Biostatistics
Academic Medical Center
Amsterdam, The Netherlands
and
European College of Pharmaceutical
Medicine, Lyon, France
a.h.zwinderman@amc.uva.nl

ISBN 978-94-007-1210-2 e-ISBN 978-94-007-1211-9
DOI 10.1007/978-94-007-1211-9
Springer Dordrecht Heidelberg London New York

Preface

The time that statistical analyses, including analysis of variance and regression analyses, were analyzed by statistical laboratory workers, has gone for good, thanks to the availability of user-friendly statistical software. The teaching department, the educations committee, and the scientific committee of the Albert Schweitzer Hospital, Dordrecht, Netherlands, are pleased to announce that since November 2009 the entire staff and personal is able to perform statistical analyses with help of SPSS Statistical Software in their offices through the institution's intranet.

It is our experience as masters' and doctorate class teachers of the European College of Pharmaceutical Medicine (EC Socrates Project) that students are eager to master adequate command of statistical software for carrying out their own statistical analyses. However, students often lack adequate knowledge of basic principles, and this carries the risk of fallacies. Computers cannot think, and can only execute commands as given. As an example, regression analysis usually applies independent and dependent variables, often interprets as causal factors and outcome factors. E.g., gender and age may determine the type of operation or the type of surgeon. The type of surgeon does not determine the age and gender. Yet, software programs have no difficulty to use nonsense determinants, and the investigator in charge of the analysis has to decide what is caused by what, because a computer can not do a thing like that, although it is essential to the analysis.

It is our experience that a pocket calculator is very helpful for the purpose of studying the basic principles. Also, a number of statistical methods can be performed more easily on a pocket calculator, than using a software program.

Advantages of the pocket calculator method include the following.

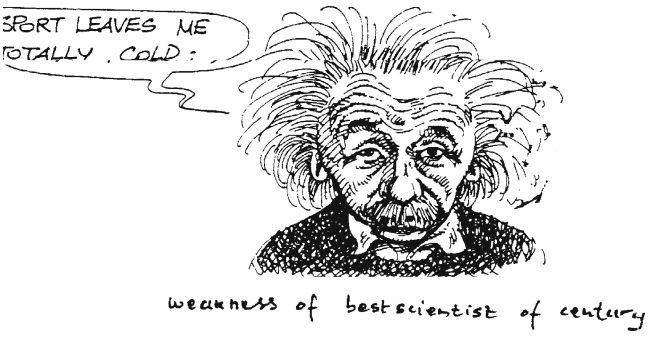
1. You better understand what you are doing. The statistical software program is kind of black box program.
2. The pocket calculator works faster, because far less steps have to be taken.
3. The pocket calculator works faster, because averages can be used.
4. With statistical software all individual data have to be included separately, a time-consuming activity in case of large data files.

Also, some analytical methods, for example, power calculations and required sample size calculations are difficult on a statistical software program, and easy on

a pocket calculator. The current book reviews the pocket calculator methods together with practical examples. This book was produced together with the similarly sized book "SPSS for Starters" from the same authors (edited by Springer, Dordrecht 2010). The two books complement one another. However, they can be studied separately as well.

Lyon
December 2010

Ton J. Cleophas
Aeilko H. Zwinderman



Contents