Sample Size Calculations in Clinical Research, 2nd edn
S.-C. Chow, J. Shao and H. Wang
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This impressive book contains formulae for computing sample size in a wide range of settings. One-sample studies and two-sample comparisons for quantitative, binary and time-to-event outcomes are covered comprehensively, with separate sample size formulae for testing equality, non-inferiority and equivalence. Many less familiar topics are also covered, including sample size for comparing k samples, bioequivalence and dose–response studies, and (new in this second edition) microarray studies and Bayesian sample size determination. Generic modifications are given for group sequential studies, as well as for dropout, treatment switching and prognostic covariates. The authors give statistical background to the procedures, the derivation of many formulae and realistic examples.

However, the book is not as wide ranging as the title suggests. It is focused on drug development and neglects clinical research settings such as cluster-randomized trials and observational studies (apart from a brief discussion of stratifying by the propensity score). In the past I have needed sample size calculations for reliability or validity studies and for testing interactions, but disappointingly these topics are not covered. There is also no mention of statistical software.

In several settings, the literature gives several different formulae, but this book gives just one of them. For example, at least three different sample size formulae for the comparison of two proportions are commonly given (with different combinations of the null and alternative variance), and a continuity correction can also be used. However, this book gives only one formula (in fact the least conservative) and makes no mention of the alternatives. To make matters worse, a later section on testing the odds ratio between two groups gives a different formula, without pointing out that the test (and therefore the power) is the same as for comparing proportions. The reader could also be confused by the notation. For example, one sample size formula for the log-rank test uses d as the probability of observing an event, but another (more conventionally) uses d as the number of events required.

Overall, this is a useful reference for the mathematical statistician, who will quickly be able to select an appropriate formula for a new problem, but I would not recommend it for beginners to sample size calculation, nor for those with less mathematical orientation.

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An Introduction to State Space Time Series Analysis
J. J. F. Commandeur and S. J. Koopman, 2007
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The author's intent as stated on page 1 is to introduce

> '... time series analysis using state space methodology to readers who are neither familiar with time series analysis nor with state space methods. The only background required in order to understand the material in this book is a basic knowledge of classical linear regression models. ....'

The first seven chapters introduce basic structural models by means of examples, starting from the local level model and then introducing local linear trends, seasonality, explanatory and intervention variables. The treatment is example based, with a conscious attempt to shield the reader from any details or complexities deemed unnecessary. Right on page 1, random processes are mentioned, but the definition is postponed until Chapter 10.

Reference is made to the Kalman filter on page 85, but nowhere are its equations presented. Only the updating formula

$$a_{t+1} = a_t + K_t(y_t - z_t' a_t)$$

is displayed, and no details on K_t are given until page 88. Some tests are presented (e.g. of normality, on page 93) but no reference whatsoever is given.

Chapters 8–12 deal with univariate and multivariate state space models somewhat more generally than the discussion of the examples in Chapters 1–7 allowed. I liked Chapter 11, which explains in some detail the fitting of state space models with SSfPack, the software that is used throughout in the illustrations.

The authors have clearly set themselves an almost impossible task, attempting to introduce a subject such as this to readers with very little background. I wonder whether their attempt to