Analysing cycles in biology medicine-a practical introduction to circular variables periodic regression

Kim N.I. Bell
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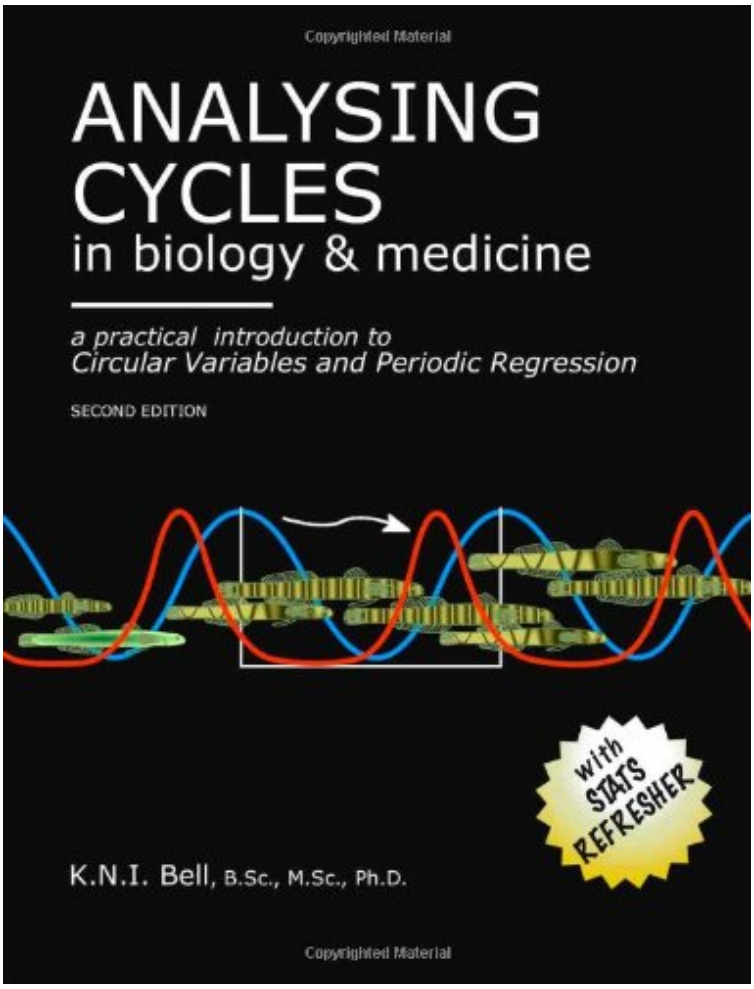

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Kim N.I. Bell : Analysing cycles in biology medicine-a practical introduction to circular variables periodic regression before purchasing it in order to gage whether or not it would be worth my time, and all praised Analysing cycles in biology medicine-a practical introduction to circular variables periodic regression:

3 of 4 people found the following review helpful. I've just one word to say : wonderful!By M. Dominique PontonI've just one word to say : wonderful!I wish I'd had Professors in stats math as good as this for explaining the usefulness of these techniques and how to deal with them.I found the text very readable and I do think that these techniques can (have to ?) be applied to the data obtained by a lot of marine biologists.They will be especially useful to analyze different parameters (temp, sal, Chla, zooplankton biom.) that have been recorded weekly during several years.D.

PontonIRD Senior Resarch OfficerNew Caledonia

This book makes periodic regression readily accessible. It provides worked-out examples, and text that describes why each step is taken (and what steps to not take). Periodic regression is suited to situations where a Y variable is measured over (around) a cycle, e.g. "air temperature over the course of a day, or year"; this is sometimes called the "cylindrical" situation---think of a 24h clock, lying flat, and temperatures marked on bars at times around its circumference. The uses or periodic regression are not restricted to only those situations where one had a direct interest in the cycles. Even if the interest is the effect of A and B on Y, if a third variable C also affects Y then any analysis obtains improved accuracy for A and B when C is included. Likewise, cycles can affect many measures, so their inclusion improves the analysis for the effects of the variables of main interest. This would apply to many examples of ecological, biological, and medical research.

"well-written ... amply illustrated ... The third appendix, entitled Stats Refresher in a Rush, gives a 34-page overview of statistical principles ... Overall, I found the book to be a useful, interesting, and even entertaining introduction to the analysis of periodic data in biology." --- Prof. F. James Rohlf*. March 2010. The Quarterly of Biology 85(1):123. (*F.J. Rohlf is the co-author of Biometry)"... well written, straight-forward and comprehensive without being excessive. [Readable] by a graduate student in biology or medicine to learn a new area of statistics that is commonly not well known to statisticians. The math is not complicated, but is not readily available to students elsewhere; Dr. Bell lays it all out for us. The book contains several very useful appendices: I. with examples, II. on spreadsheet formulas and macros, III. a stats refresher. ... I wish I had it 25 years ago!" --- Prof. D G Patriquin, Dalhousie U. (ret'd), Halifax, N.S. (on .ca)"I've just one word to say : wonderful! -- I wish I'd had Professors in stats math as good as this for explaining the usefulness of these techniques and how to deal with them. I found the text very readable and I do think that these techniques can (have to ?) be applied to the data obtained by a lot of marine biologists" --- D Ponton (PhD), IRD, New Caledonia. (on .com)"Well-written guide to the analysis of cyclical data. ... a very accessible guide to dealing with cyclical data.... Written in a clear manner and a lively conversational tone, this text includes statistical primers for those students who might not have a great stats background. Much of the information in this textbook is either difficult to find elsewhere, or buried in textbooks that are written for statisticians. I ... recommend this book to life science students...." --- J Eustace (grad student, statistics) (on .ca)From the Author(History and thanks) Cycles are the essence of life. I am a field ecologist who ran into periodic data that his colleagues couldn't advise on. I therefore improvised, re-invented, and later linked with established methods. It became increasingly clear that biologists need to know how to analyse cycles. Going back to where it began, I had seen wind directions improperly summarized by the arithmetic mean; that was clearly wrong because the arithmetic mean of a few northerly winds can give a southerly result. ... This book thus began as notes to myself and a letter to Mr. Marc Blanc of the weather service of Dominica, who merits thanks for his dedication to preserving historic weather data. ... It is impossible to understate my debt to W.G. Warren in this book. ... Thanks are due many more. ... Despite help from others, errors remain my responsibility alone. I welcome corrections, comments, suggestions, and postcards. I hope you will enjoy the opportunities this mode of analysis can give you, and my email is on pagevi so you can send me your comments and questions.From the Back CoverCycles surround us. Indeed, they are the essence of life, and critically important in biology and medicine. We need to know how to analyse and understand them. But, too often, researchers are given poor advice: to keep cycles out of data--by restricting sampling to the same time of day, tide, etc. That's a bad approach; it's costly because you have to wait for your chosen special times, and even more costly with multiple cycles because you have to wait for even rarer conjunctions of special times (e.g. 1100h and high tide) in each of them. The final consequence is: no matter how carefully you worked, the opportunity to describe key cycles is lost, so your findings are virtually meaningless because they can't be generalised outside the special times you chose. In fact, it is easier, more useful, and far more beautiful, to put cycles into the analysis than to keep them out of the data. This book shows you how. Written in a welcoming style, the book anticipates readers ranging from apprehensive to advanced. It is copiously illustrated with conceptual diagrams and worked-out examples. It contains all that's needed to get started and know what you are doing and why: even the basic trigonometry and a crisp stats refresher. All you need is the book, your data, and Excel or a stats package.