

# Regression Diagnostics Identifying Influential Data And Sources Of Collinearity

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*Regression Diagnostics Identifying Influential Data And Sources Of Collinearity*

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## MASON CUNNINGHAM

### Applied Linear Regression BoD - Books on Demand

Treats linear regression diagnostics as a tool for application of linear regression models to real-life data. Presentation makes extensive use of examples to illustrate theory. Assesses the effect of measurement errors on the estimated coefficients, which is not accounted for in a standard least squares estimate but is important where regression coefficients are used to apportion effects due to different variables. Also assesses qualitatively and numerically the robustness of the regression fit.

*Sensitivity Analysis in Linear Regression* SAGE Publications

SAS/IML software is a powerful tool for data analysts because it enables implementation of statistical algorithms that are not available in any SAS procedure. Rick Wicklin's Statistical Programming with SAS/IML Software is the first book to provide a comprehensive description of the software and how to use it. He presents tips and techniques that enable you to use the IML procedure and the SAS/IML Studio application efficiently. In addition to providing a comprehensive introduction to the software, the book also shows how to create and modify statistical graphs, call SAS procedures and R functions from a SAS/IML program, and implement such modern statistical techniques as simulations and bootstrap methods in the SAS/IML language. Written for data analysts working in all industries, graduate students, and consultants, Statistical Programming with SAS/IML Software includes numerous code snippets and more than 100 graphs. This book is part of the SAS Press program.

*Explanatory Model Analysis* Elsevier

Explanatory Model Analysis Explore, Explain and Examine Predictive Models is a set of methods and tools designed to build better predictive models and to monitor their behaviour in a changing environment. Today, the true bottleneck in predictive modelling is neither the lack of data, nor the lack of computational power, nor inadequate algorithms, nor the lack of flexible models. It is the lack of tools for model exploration (extraction of relationships learned by the model), model explanation (understanding the key factors influencing model decisions) and model examination (identification of model weaknesses and evaluation of model's performance). This book presents a collection of model agnostic methods that may be used for any black-box model together with real-world applications to classification and regression problems.

*Statistical Programming with SAS/IML Software* Lulu.com

This volume contains the papers from the Sixth Eugene Lukacs Symposium on "Multidimensional Statistical Analysis and Random Matrices", which was held at the Bowling Green State University, Ohio, USA, 29--30 March 1996. Multidimensional statistical analysis and random matrices have been the topics of great research. The papers presented in this volume discuss many varied aspects of this all-encompassing topic. In particular, topics covered include generalized statistical analysis, elliptically contoured distribution, covariance structure analysis, metric scaling, detection of outliers, density approximation, and circulant and band random matrices.

*Regression Diagnostics* SAGE

"Comprising more than 500 entries, the Encyclopedia of Research Design explains how to make decisions about research design, undertake research projects in an ethical manner, interpret and draw valid inferences from data, and evaluate experiment design strategies and results. Two additional features carry this encyclopedia far above other works in the field: bibliographic entries devoted to significant articles in the history of research design and reviews of contemporary tools, such as software and statistical procedures, used to analyze results. It covers the spectrum of research design strategies, from material presented in introductory classes to topics necessary in graduate research; it addresses cross- and multidisciplinary research needs, with many examples

drawn from the social and behavioral sciences, neurosciences, and biomedical and life sciences; it provides summaries of advantages and disadvantages of often-used strategies; and it uses hundreds of sample tables, figures, and equations based on real-life cases."--Publisher's description.

**Bilinear Regression Analysis** World Scientific

This book expands on the classical statistical multivariate analysis theory by focusing on bilinear regression models, a class of models comprising the classical growth curve model and its extensions. In order to analyze the bilinear regression models in an interpretable way, concepts from linear models are extended and applied to tensor spaces. Further, the book considers decompositions of tensor products into natural subspaces, and addresses maximum likelihood estimation, residual analysis, influential observation analysis and testing hypotheses, where properties of estimators such as moments, asymptotic distributions or approximations of distributions are also studied. Throughout the text, examples and several analyzed data sets illustrate the different approaches, and fresh insights into classical multivariate analysis are provided. This monograph is of interest to researchers and Ph.D. students in mathematical statistics, signal processing and other fields where statistical multivariate analysis is utilized. It can also be used as a text for second graduate-level courses on multivariate analysis.

**Modern Statistics with R** John Wiley & Sons

Integrating the research from the author's previous work, Regression Diagnostics, and significant revision and updating, this monograph presents a self-contained treatment of the problems of ill-conditioning and data weaknesses as they affect the least-squares estimation of the linear model, along with extensions to nonlinear models and simultaneous-equations estimators. Also features a substantial amount of new information, including background material and data sets and numerous related elements previously scattered throughout the literature.

**Flexible Imputation of Missing Data, Second Edition** "O'Reilly Media, Inc."

This book - in conjunction with the double volume LNCS 9225-9226 - constitutes the refereed proceedings of the 11th International Conference on Intelligent Computing, ICIC 2015, held in Fuzhou, China, in August 2015. The total of 191 full and 42 short papers presented in the three ICIC 2015 volumes was carefully reviewed and selected from 671 submissions. Original contributions related to this theme were especially solicited, including theories, methodologies, and applications in science and technology. This year, the conference concentrated mainly on machine learning theory and methods, soft computing, image processing and computer vision, knowledge discovery and data mining, natural language processing and computational linguistics, intelligent control and automation, intelligent communication networks and web applications, bioinformatics theory and methods, healthcare and medical methods, and information security.

*Learning Statistics with R* SAGE

Outliers are the key focus of this book. The authors concentrate on the practical aspects of dealing with outliers in the forms of data that arise most often in applications: single and multiple samples, linear regression, and factorial experiments. Available only as an E-Book.

*Modern Regression Methods* SAGE Publications

Designed to serve as the first point of reference on the subject, Comprehensive Chemometrics presents an integrated summary of the present state of chemical and biochemical data analysis and manipulation. The work covers all major areas ranging from statistics to data acquisition, analysis, and applications. This major reference work provides broad-ranging, validated summaries of the major topics in chemometrics—with chapter introductions and advanced reviews for each area. The level of material is appropriate for graduate students as well as active researchers seeking a ready reference on obtaining and analyzing scientific data. Features the contributions of leading experts from 21 countries, under the guidance of the Editors-in-Chief and a team of specialist Section Editors: L. Buydens; D. Coomans; P. Van Espen; A. De Juan; J.H. Kalivas; B.K. Lavine; R. Leardi; R.

Phan-Tan-Luu; L.A. Sarabia; and J. Trygg Examines the merits and limitations of each technique through practical examples and extensive visuals: 368 tables and more than 1,300 illustrations (750 in full color) Integrates coverage of chemical and biological methods, allowing readers to consider and test a range of techniques Consists of 2,200 pages and more than 90 review articles, making it the most comprehensive work of its kind Offers print and online purchase options, the latter of which delivers flexibility, accessibility, and usability through the search tools and other productivity-enhancing features of ScienceDirect

[Regression Diagnostics](#) Elsevier

This IMA Volume in Mathematics and its Applications DIRECTIONS IN ROBUST STATISTICS AND DIAGNOSTICS is based on the proceedings of the first four weeks of the six week IMA 1989 summer program "Robustness, Diagnostics, Computing and Graphics in Statistics". An important objective of the organizers was to draw a broad set of statisticians working in robustness or diagnostics into collaboration on the challenging problems in these areas, particularly on the interface between them. We thank the organizers of the robustness and diagnostics program Noel Cressie, Thomas P. Hettmansperger, Peter J. Huber, R. Douglas Martin, and especially Werner Stahel and Sanford Weisberg who edited the proceedings. A vner Friedman Willard Miller, Jr. PREFACE Central themes of all statistics are estimation, prediction, and making decisions under uncertainty. A standard approach to these goals is through parametric mod elling. Parametric models can give a problem sufficient structure to allow standard, well understood paradigms to be applied to make the required inferences. If, how ever, the parametric model is not completely correct, then the standard inferential methods may not give reasonable answers. In the last quarter century, particularly with the advent of readily available computing, more attention has been paid to the problem of inference when the parametric model used is not correctly specified.

[Nonparametric Simple Regression](#) SAS Institute

An introductory overview of spatial analysis and statistics through GIS, including worked examples and critical analysis of results.

[Methods and Applications of Longitudinal Data Analysis](#) Springer Science & Business Media

Detecting influential observations and outliers - Detecting and assessing collinearity - Applications and remedies - Research issues and directions for extensions.

[Regression Diagnostics](#) John Wiley & Sons

"Over the years, I have had the opportunity to teach several regression courses, and I cannot think of a better undergraduate text than this one." —The American Statistician "The book is well written and has many exercises. It can serve as a very good textbook for scientists and engineers, with only basic statistics as a prerequisite. I also highly recommend it to practitioners who want to solve real-life prediction problems." (Computing Reviews) Modern Regression Methods, Second Edition maintains the accessible organization, breadth of coverage, and cutting-edge appeal that earned its predecessor the title of being one of the top five books for statisticians by an Amstat News book editor in 2003. This new edition has been updated and enhanced to include all-new information on the latest advances and research in the evolving field of regression analysis. The book provides a unique treatment of fundamental regression methods, such as diagnostics, transformations, robust regression, and ridge regression. Unifying key concepts and procedures, this new edition emphasizes applications to provide a more hands-on and comprehensive understanding of regression diagnostics. New features of the Second Edition include: A revised chapter on logistic regression, including improved methods of parameter estimation A new chapter focusing on additional topics of study in regression, including quantile regression, semiparametric regression, and Poisson regression A wealth of new and updated exercises with worked solutions An extensive FTP site complete with Minitab macros, which allow the reader to compute analyses, and specialized procedures Updated references at the end of each chapter that direct the reader to the appropriate resources for further study An accessible guide to state-of-the-art regression techniques, Modern Regression Methods, Second Edition is an excellent book for courses in regression analysis at the upper-undergraduate and graduate levels. It is also a valuable reference for practicing statisticians, engineers, and physical scientists.

[Linear Regression Analysis](#) John Wiley & Sons

This paper attempts to provide the user of linear multiple regression with a battery of diagnostic tools to determine which, if any, data points have high leverage or influence on the estimation process and how these possibly discrepant data points differ from the patterns set by the majority of the data. The point of view taken is that when diagnostics indicate the presence of anomalous data, the choice is open as to whether these data are in fact unusual and helpful, or possibly harmful and thus in need of modifications or deletion. The methodology developed depends on differences, derivatives, and decompositions of basic regression statistics. There is also a discussion of how these techniques can be used with robust and ridge estimators. An example is given showing the

use of diagnostic methods in the estimation of a cross-country savings rate model

[An R and S-Plus Companion to Applied Regression](#) Lulu.com

Emphasizing conceptual understanding over mathematics, this user-friendly text introduces linear regression analysis to students and researchers across the social, behavioral, consumer, and health sciences. Coverage includes model construction and estimation, quantification and measurement of multivariate and partial associations, statistical control, group comparisons, moderation analysis, mediation and path analysis, and regression diagnostics, among other important topics. Engaging worked-through examples demonstrate each technique, accompanied by helpful advice and cautions. The use of SPSS, SAS, and STATA is emphasized, with an appendix on regression analysis using R. The companion website ([www.afhayes.com](http://www.afhayes.com)) provides datasets for the book's examples as well as the RLM macro for SPSS and SAS. Pedagogical Features: \*Chapters include SPSS, SAS, or STATA code pertinent to the analyses described, with each distinctively formatted for easy identification. \*An appendix documents the RLM macro, which facilitates computations for estimating and probing interactions, dominance analysis, heteroscedasticity-consistent standard errors, and linear spline regression, among other analyses. \*Students are guided to practice what they learn in each chapter using datasets provided online. \*Addresses topics not usually covered, such as ways to measure a variable's importance, coding systems for representing categorical variables, causation, and myths about testing interaction.

[Regression Diagnostics](#) Quality Press

Statistical methods are a key part of of data science, yet very few data scientists have any formal statistics training. Courses and books on basic statistics rarely cover the topic from a data science perspective. This practical guide explains how to apply various statistical methods to data science, tells you how to avoid their misuse, and gives you advice on what's important and what's not. Many data science resources incorporate statistical methods but lack a deeper statistical perspective. If you're familiar with the R programming language, and have some exposure to statistics, this quick reference bridges the gap in an accessible, readable format. With this book, you'll learn: Why exploratory data analysis is a key preliminary step in data science How random sampling can reduce bias and yield a higher quality dataset, even with big data How the principles of experimental design yield definitive answers to questions How to use regression to estimate outcomes and detect anomalies Key classification techniques for predicting which categories a record belongs to Statistical machine learning methods that "learn" from data Unsupervised learning methods for extracting meaning from unlabeled data

[Linear Regression Diagnostics](#) Academic Press

Explaining the techniques needed for exploring problems that comprise a regression analysis, and for determining whether certain assumptions appear reasonable, this book covers such topics as the problem of collinearity in multiple regression, non-normality of errors, and discrete data.

[Volume 16: How to Detect and Handle Outliers](#) VSP

"This book fits right into a needed niche: rigorous enough to give full explanation of the power of the S language, yet accessible enough to assign to social science graduate students without fear of intimidation. It is a tremendous balance of applied statistical "firepower" and thoughtful explanation. It meets all of the important mechanical needs: each example is given in detail, code and data are freely available, and the nuances of models are given rather than just the bare essentials. It also meets some important theoretical needs: linear models, categorical data analysis, an introduction to applying GLMs, a discussion of model diagnostics, and useful instructions on writing customized functions." —JEFF GILL, University of Florida, Gainesville

[Modern Data Analysis](#) Franklin Classics Trade Press

The past decades have transformed the world of statistical data analysis, with new methods, new types of data, and new computational tools. The aim of Modern Statistics with R is to introduce you to key parts of the modern statistical toolkit. It teaches you: - Data wrangling - importing, formatting, reshaping, merging, and filtering data in R. - Exploratory data analysis - using visualisation and multivariate techniques to explore datasets. - Statistical inference - modern methods for testing hypotheses and computing confidence intervals. - Predictive modelling - regression models and machine learning methods for prediction, classification, and forecasting. - Simulation - using simulation techniques for sample size computations and evaluations of statistical methods. - Ethics in statistics - ethical issues and good statistical practice. - R programming - writing code that is fast, readable, and free from bugs. Starting from the very basics, Modern Statistics with R helps you learn R by working with R. Topics covered range from plotting data and writing simple R code to using cross-validation for evaluating complex predictive models and using simulation for sample size determination. The book includes more than 200 exercises with fully worked solutions. Some familiarity with basic statistical concepts, such as linear regression, is assumed. No previous programming experience is needed.