

Regression Equation - Example

Recall the example involving Copier Sales of America. The sales manager gathered information on the number of sales calls made and the number of copiers sold for a random sample of 10 sales representatives. Use the least squares method to determine a linear equation to express the relationship between the two variables.

What is the expected number of copiers sold by a representative who made 20 calls?

Sales Representative	Number of Sales Calls	Number of Copiers Sold
Tom Keller	20	30
Jeff Hall	40	60
Brian Vrost	20	40
Greg Fish	30	60
Susan Welch	10	30
Carlos Ramirez	10	40
Rich Niles	20	40
Mike Kiel	20	50
Mark Reynolds	20	30
Soni Jones	30	70

Step 1 – Find the slope (b) of the line

$$b = r \left(\frac{s_y}{s_x} \right) = .759 \left(\frac{14.337}{9.189} \right) = 1.1842$$

Step 2 – Find the y -intercept (a)

$$a = \bar{Y} - b\bar{X} = 45 - 1.1842(22) = 18.9476$$

The regression equation is:

$$Y = a + bX$$

$$Y = 18.9476 + 1.1842X$$

$$Y = 18.9476 + 1.1842(20)$$

$$Y = 42.6316$$

Regression Analysis By Example

Ali S. Hadi, Samprit Chatterjee



Regression Analysis By Example:

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Additionally methods described throughout the book can be carried out with most of the currently available statistical software packages such as the software package R Regression Analysis by Example Fifth Edition is suitable for anyone with an understanding of elementary statistics Regression Analysis By Example Using R Ali S. Hadi, Samprit Chatterjee, 2023-10-11 Regression Analysis By Example Using R A STRAIGHTFORWARD AND CONCISE DISCUSSION OF THE ESSENTIALS OF REGRESSION ANALYSIS In the newly revised sixth edition of Regression Analysis By Example Using R distinguished statistician Dr Ali S Hadi delivers an expanded and thoroughly updated discussion of exploratory data analysis using regression analysis in R The book provides in depth treatments of regression diagnostics transformation multicollinearity logistic regression and robust regression The author clearly demonstrates effective methods of regression analysis with examples that contain the types of data irregularities commonly encountered in the real world This newest edition also offers a brand new easy to read chapter on the freely available statistical software package R Readers will also find Reorganized expanded and upgraded exercises at the end of each chapter with an emphasis on data analysis Updated data sets and examples throughout the book Complimentary access to a companion website that provides data sets in xlsx csv and txt format Perfect for upper level undergraduate or beginning graduate students in statistics mathematics biostatistics and computer science programs Regression Analysis By Example Using R will also benefit readers who need a reference for quick updates on regression methods and applications Regression Analysis by Example Samprit Chatterjee, Ali S. Hadi, Bertram Price, 1999-11-29 Regression analysis provides a conceptually simple method for investigating relationships among variables Carrying out a successful application of regression analysis however requires a balance of theoretical results empirical rules and subjective judgement Regression Analysis by Example Third Edition explains the principles underlying exploratory data analysis emphasizing data analysis rather than statistical theory This is not just another edition of the book it is a major rewriting and reorganization of the previous edition The new edition is expanded and updated to reflect recent advances in the field offering in depth treatment of diagnostic plots time series regression multicollinearity and logistic regression Suitable for anyone with an understanding of elementary statistics Regression Analysis by Example Third Edition illustrates methods of regression analysis with examples containing the types of irregularities commonly encountered in the real world Each example isolates one or two techniques and features detailed discussions of the techniques themselves the required assumptions and the evaluated success of each technique Each of the methods described can be carried out with most currently available statistical software packages Regression Analysis by Example Samprit Chatterjee, Bertram Price, 1977-10-19 Simple linear regression Detection and correction of model violations simple linear regression Multiple regression model Qualitative variables as regressors Weighted least squares The problem of correlated errors Analysis of collinear data Biased estimation of regression coefficients Selection of variables in a regression equation **Regression Analysis by Example, 4th Edition** Samprit Chatterjee, Ali Hadi, 2006 The essentials of regression analysis through practical

applications Regression analysis is a conceptually simple method for investigating relationships among variables Carrying out a successful application of regression analysis however requires a balance of theoretical results empirical rules and subjective judgement Regression Analysis by Example Fourth Edition has been expanded and thoroughly updated to reflect recent advances in the field The emphasis continues to be on exploratory data analysis rather than statistical theory The book offers in depth treatment of regression diagnostics transformation multicollinearity logistic regression and robust regression This new edition features the following enhancements Chapter 12 Logistic Regression is expanded to reflect the increased use of the logit models in statistical analysis A new chapter entitled Further Topics discusses advanced areas of regression analysis Reorganized expanded and upgraded exercises appear at the end of each chapter A fully integrated Web page provides data sets Numerous graphical displays highlight the significance of visual appeal Regression Analysis by Example Fourth Edition is suitable for anyone with an understanding of elementary statistics Methods of regression analysis are clearly demonstrated and examples containing the types of irregularities commonly encountered in the real world are provided Each example isolates one or two techniques and features detailed discussions of the techniques themselves the required assumptions and the evaluated success of each technique The methods described throughout the book can be carried out with most of the currently available statistical software packages such as the software package R [Handbook of Regression Analysis With Applications in R](#) Samprit Chatterjee, Jeffrey S. Simonoff, 2020-07-27 Handbook and reference guide for students and practitioners of statistical regression based analyses in R Handbook of Regression Analysis with Applications in R Second Edition is a comprehensive and up to date guide to conducting complex regressions in the R statistical programming language The authors thorough treatment of classical regression analysis in the first edition is complemented here by their discussion of more advanced topics including time to event survival data and longitudinal and clustered data The book further pays particular attention to methods that have become prominent in the last few decades as increasingly large data sets have made new techniques and applications possible These include Regularization methods Smoothing methods Tree based methods In the new edition of the Handbook the data analyst s toolkit is explored and expanded Examples are drawn from a wide variety of real life applications and data sets All the utilized R code and data are available via an author maintained website Of interest to undergraduate and graduate students taking courses in statistics and regression the Handbook of Regression Analysis will also be invaluable to practicing data scientists and statisticians

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