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Nota di contenuto	Design and Analysis of Experiments in the Health Sciences; Contents; Preface; 1 The Basics; 1.1 Four Basic Questions; 1.2 Variation; 1.3 Principles of Design and Analysis; 1.4 Experiments and Observational Studies; 1.5 Illustrative Applications of Principles; 1.6 Experiments in the Health Sciences; 1.7 Adaptive Allocation; 1.7.1 Equidistribution; 1.7.2 Adaptive Allocation Techniques; 1.8 Sample Size Calculations; 1.9 Statistical Models for the Data; 1.10 Analysis and Presentation; 1.10.1 Graph the Data in Several Ways; 1.10.2 Assess Assumptions of the Statistical Model 1.10.3 Confirmatory and Exploratory Analysis1.10.4 Missing Data Need Careful Accounting; 1.10.5 Statistical Software; 1.11 Notes; 1.11.1 Characterization Studies; 1.11.2 Additional Comments on Balance;

1.11.3 Linear and Nonlinear Models; 1.11.4 Analysis of Variance Versus Regression Analysis; 1.12 Summary; 1.13 Problems; 2 Completely Randomized Designs; 2.1 Randomization; 2.2 Hypotheses and Sample Size; 2.3 Estimation and Analysis; 2.4 Example; 2.5 Discussion and Extensions; 2.5.1 Preparing Data for Computer Analysis; 2.5.2 Treatment Assignment in this Example; 2.5.3 Check on Randomization
2.5.4 Partitioning the Treatment Sum of Squares2.5.5 Alternative Endpoints; 2.5.6 Dummy Variables; 2.5.7 Contrasts; 2.6 Randomization; 2.7 Hypotheses and Sample Size; 2.8 Estimation and Analysis; 2.9 Example; 2.10 Discussion and Extensions; 2.10.1 Two Roles for ANCOVA; 2.10.2 Partitioning of Sums of Squares; 2.10.3 Assumption of Parallelism; 2.11 Notes; 2.11.1 Constrained Randomization; 2.11.2 Assumptions of the Analysis of Variance and Covariance; 2.11.3 When the Assumptions Don't Hold; 2.11.4 Alternative Graphical Displays; 2.11.5 Sample Sizes for More Than Two Levels
2.11.6 Limitations of Computer Output2.11.7 Unequal Sample Sizes; 2.11.8 Design Implications of the CRD; 2.11.9 Power and Alternative Hypotheses; 2.11.10 Regression or Analysis of Variance?; 2.11.11 Bioassay; 2.12 Summary; 2.13 Problems; 3 Randomized Block Designs; 3.1 Randomization; 3.2 Hypotheses and Sample Size; 3.3 Estimation and Analysis; 3.4 Example; 3.5 Discussion and Extensions; 3.5.1 Evaluating Model Assumptions; 3.5.2 Multiple Comparisons; 3.5.3 Number of Treatments and Block Size; 3.5.4 Missing Data; 3.5.5 Does It Always Pay to Block?; 3.5.6 Concomitant Variables; 3.5.7 Imbalance
3.6 Randomization3.7 Hypotheses and Sample Size; 3.8 Estimation and Analysis; 3.9 Example; 3.10 Discussion and Extensions; 3.10.1 Implications of the Model; 3.10.2 Number of Latin Squares; 3.11 Randomization; 3.12 Hypotheses and Sample Size; 3.13 Estimation and Analysis; 3.14 Example; 3.15 Discussion and Extensions; 3.15.1 Partially Balanced Incomplete Block Designs; 3.16 Notes; 3.16.1 Analysis Follows Design; 3.16.2 Relative Efficiency; 3.16.3 Additivity of the Model; 3.17 Summary; 3.18 Problems; 4 Factorial Designs; 4.1 Randomization; 4.2 Hypotheses and Sample Size
4.3 Estimation and Analysis

Sommario/riassunto

An accessible and practical approach to the design and analysis of experiments in the health sciences Design and Analysis of Experiments in the Health Sciences provides a balanced presentation of design and analysis issues relating to data in the health sciences and emphasizes new research areas, the crucial topic of clinical trials, and state-of-the-art applications. Advancing the idea that design drives analysis and analysis reveals the design, the book clearly explains how to apply design and analysis principles in animal, human, and laboratory experiments whil