



Introduction to Statistical Analysis of Laboratory Data

By Alfred Bartolucci, Karan P. Singh, Sejong Bae



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Introduction to Statistical Analysis of Laboratory Data presents a detailed discussion of important statistical concepts and methods of data presentation and analysis

- Provides detailed discussions on statistical applications including a comprehensive package of statistical tools that are specific to the laboratory experiment process
- Introduces terminology used in many applications such as the interpretation of assay design and validation as well as “fit for purpose” procedures including real world examples
- Includes a rigorous review of statistical quality control procedures in laboratory methodologies and influences on capabilities
- Presents methodologies used in the areas such as method comparison procedures, limit and bias detection, outlier analysis and detecting sources of variation
- Analysis of robustness and ruggedness including multivariate influences on response are introduced to account for controllable/uncontrollable laboratory conditions

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Introduction to Statistical Analysis of Laboratory Data By Alfred Bartolucci, Karan P. Singh, Sejong Bae Bibliography

- Sales Rank: #3130186 in Books
- Published on: 2015-12-02
- Original language: English
- Number of items: 1
- Dimensions: 9.20" h x .80" w x 6.20" l, 1.47 pounds
- Binding: Hardcover
- 256 pages

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Editorial Review

Review

"The book presents a detailed discussion of important statistical concepts and methods of data presentation and analysis.

-Provides detailed discussions on statistical applications including a comprehensive package of statistical tools that are specific to the laboratory experiment process.
- Introduces terminology used in many applications such as the interpretation of assay design and validation as well as "fit for purpose" procedures including real world examples." (Zentralblatt MATH 2016)

From the Back Cover

Presents a detailed discussion of important statistical concepts and methods of data presentation and analysis

There is an unmet need to have the necessary statistical tools in a comprehensive package with a focus on laboratory experimentation. The study of the statistical handling of laboratory data from the design, analysis and graphical perspective is essential for understanding pharmaceutical research and development of results involving practical quantitative interpretation and communication of the experimental process.

Introduction to Statistical Analysis of Laboratory Data presents a detailed discussion of important basic statistical concepts and methods of data presentation and analysis in aspects of biological experimentation requiring a fundamental knowledge of probability and the foundations of statistical inference, including basic statistical terminology such as simple geometric statistics and transformations needed to effectively communicate and understand ones data results.

Advanced topics of the book go beyond the basics and cover more complex issues in laboratory investigations with examples, including association studies including correlation and regression analysis with laboratory applications including dose response and non-linear dose response considerations. Where relevant, the procedures provided follow the CLSI (Clinical and Laboratory Standards Institute) guidelines for data handling and presentation.

Introduction to Statistical Analysis of Laboratory Data Presents:

- A comprehensive package of statistical tools (simple, cross sectional, longitudinal) required in laboratory experimentation
- A solid introduction to the terminology used in many applications such as the interpretation of assay design and validation as well as "fit for purpose" procedures
- A rigorous review of statistical quality control procedures in laboratory methodologies and influences on capabilities
- A thorough presentation of methodologies used in the areas such as method comparison procedures, limit and bias detection, outlier analysis and detecting sources of variation

Introduction to Statistical Analysis of Laboratory Data is suitable for graduate students in biology,

chemistry, physical pharmacy, pharmaceuticals, environmental health sciences and engineering and biopharmaceutics.

Alfred A. Bartolucci is Professor Emeritus in the Department of Biostatistics, School of Public Health, University of Alabama at Birmingham. He has over 300 peer reviewed publications (manuscripts and book chapters) in the areas of original statistical methodologic research and clinical and laboratory statistical applications. An endowed scholarship in Biostatistics at UAB was established in his honor.

Karan P. Singh is currently Professor of Medicine and serves as Director of the Biostatistics and Bioinformatics Shared Facility at the University of Alabama at Birmingham Comprehensive Cancer Center. He has authored or co-authored over 250 peer-reviewed articles, book chapters and peer-reviewed congress or conference proceedings. He is a Fellow of the American Statistical association.

Sejong Bae is Professor of Medicine and serves as Co- Director of the Biostatistics and Bioinformatics Shared Facility, Deputy Director of the Coronary Artery Risk Development in Young Adults Coordination Center, and Director of Data, Information, and Statistics Core in the Division of Preventive Medicine. In 2009 he was elected to International Statistical Institute.

About the Author

Alfred A. Bartolucci is Professor Emeritus in the Department of Biostatistics, School of Public Health, University of Alabama at Birmingham. He has over 300 peer reviewed publications (manuscripts and book chapters) in the areas of original statistical methodologic research and clinical and laboratory statistical applications. An endowed scholarship in Biostatistics was established at UAB in his honor.

Karan P. Singh is currently Professor of Medicine and serves as Director of the Biostatistics and Bioinformatics Shared Facility at the University of Alabama at Birmingham Comprehensive Cancer Center. He has authored or co-authored over 250 peer-reviewed articles, book chapters and peer-reviewed congress or conference proceedings. He is a Fellow of the American Statistical Association.

Sejong Bae is Professor of Medicine and serves as Co- Director of the Biostatistics and Bioinformatics Shared Facility, Deputy Director of the Coronary Artery Risk Development in Young Adults Coordination Center, and Director of Data, Information, and Statistics Core in the Division of Preventive Medicine In 2009 he was elected to the International Statistical Institute.

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