Statistical Tools for the Comprehensive Practice of Industrial Hygiene and Environmental Health Sciences

Description: Reviews and reinforces concepts and techniques typical of a first statistics course with additional techniques useful to the IH/EHS practitioner.

The occupational health, safety, and environmental science fields are data-intensive. Industrial hygiene and environmental health sciences (IH/EHS) professionals spend a lot of their time measuring things, and do so with the goal of answering a specific question. How they go about the measurements—the what, when, where, who, and how of the measurements—is driven by the why. That is, by the question they are trying to answer. However, the data always has some uncertainty because of measurement variability, and statistics helps the user see through the fog of uncertainty in order to draw accurate inferences about what is being measured.

Most undergraduate and graduate programs in industrial hygiene and environmental health sciences recognize the value of statistical tools, and require an introductory statistics course. Additional statistical tools and techniques beyond those usually covered in a basic course are typically needed. Statistical Tools for the Comprehensive Practice of Industrial Hygiene and Environmental Health Sciences reviews and reinforces the concepts and techniques typical of a first statistics course, and supplement them with additional graphical and non-parametric techniques that may be particularly useful to the IH/EHS practitioner.

Organized into nine chapters Statistical Tools for the Comprehensive Practice of Industrial Hygiene and Environmental Health Sciences features:

- Techniques for displaying data, descriptive statistics, and data frequency distributions in various tabular and graphical formats
- Reviews parametric two-sample comparison techniques and introduces their non-parametric equivalents
- Techniques for assessing the likelihood of exposures in the upper tail of the distribution of potential exposures
- One-way parametric analysis of variance (ANOVA) and presents the non-parametric equivalent one-way ANOVA
- Two-way ANOVA and presents the non-parametric equivalent two-way ANOVA
- Parametric correlation analysis and regression analysis, including multiple regression and model-building
- Applications of the Chi-square test to frequency data, and introduces Fisher’s Exact Test
- Application of Poisson probability based techniques, including comparison of two Poisson variables

Students in industrial hygiene, safety, safety engineering, environmental engineering, environmental health, environmental sciences, and similar programs, and graduates of these programs who are already practicing professionals will benefit from the techniques covered in this text. Analysis using the readily available Excel® statistical functions is emphasized, so that special statistical software and programming expertise are not required.

David L. Johnson has over 40 years of experience in environmental engineering and occupational safety and health practice, research, and teaching. Dr. Johnson was a practicing environmental engineer and industrial hygienist with the United States Army for 20 years, serving in a variety of positions in the United States, Europe, and the Middle East. He joined the faculty of the University of Oklahoma’s College of Public Health, Department of Occupational and Environmental Health in 1991.

Contents: Preface xv
Acknowledgments xvii
About the Author xix
About the Companion Website xxi
8.4 Multiple Correlation Analysis 195
8.4.1 Parametric Multiple Correlation 195
8.4.2 Nonparametric Multiple Correlation: Kendall’s Coefficient of Concordance 195
8.5 Determining Causation 198
8.6 Summary 198
References 204
9 Regression Analysis 205
9.1 Introduction 205
9.2 Linear Regression 205
9.2.1 Simple Linear Regression 207
9.2.2 Nonconstant Variance Transformations and Weighted Least Squares Regression 209
9.2.3 Multiple Linear Regression 213
9.2.3.1 Multiple Regression in Excel 215
9.2.3.2 Multiple Regression Using the Excel Solver Utility 218
9.2.3.3 Multiple Regression Using Advanced Software Packages 221
9.2.4 Using Regression for Factorial ANOVA with Unequal Sample Sizes 222
9.2.5 Multiple Correlation Analysis Using Multiple Regression 227
9.2.5.1 Assumptions of Parametric Multiple Correlation 233
9.2.5.2 Options When Collinearity Is a Problem 233
9.2.6 Polynomial Regression 234
9.2.7 Interpreting Linear Regression Results 234
9.2.8 Linear Regression versus ANOVA 235
9.3 Logistic Regression 235
9.3.1 Odds and Odds Ratios 236
9.3.2 The Logit Transformation 238
9.3.3 The Likelihood Function 240
9.3.4 Logistic Regression in Excel 240
9.3.5 Likelihood Ratio Test for Significance of MLE Coefficients 241
9.3.6 Odds Ratio Confidence Limits in Multivariate Models 243
9.4 Poisson Regression 243
9.4.1 Poisson Regression Model 243
9.4.2 Poisson Regression in Excel 244
Ordering:

Order Online - http://www.researchandmarkets.com/reports/3894175/

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct.

Product Name: Statistical Tools for the Comprehensive Practice of Industrial Hygiene and Environmental Health Sciences
Web Address: http://www.researchandmarkets.com/reports/3894175/
Office Code: SC2GC65B

Product Format
Please select the product format and quantity you require:

| Quantity | Hard Copy (Hard Back): | USD 114 + USD 28 Shipping/Handling |

* Shipping/Handling is only charged once per order.
* The price quoted above is only valid for 30 days. Please submit your order within that time frame to avail of this price as all prices are subject to change.

Contact Information
Please enter all the information below in BLOCK CAPITALS

Title: [ ] Mr [ ] Mrs [ ] Dr [ ] Miss [ ] Ms [ ] Prof
First Name: ___________________________ Last Name: ___________________________
Email Address: * ___________________________
Job Title: ___________________________
Organisation: ___________________________
Address: ___________________________
City: ___________________________
Postal / Zip Code: ___________________________
Country: ___________________________
Phone Number: ___________________________
Fax Number: ___________________________

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:
Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: __________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World