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Nota di contenuto	Statistics in Food Science and Nutrition; Preface; Contents; Chapter 1: Statistics in Food Science and Nutrition; 1.1 The Food Statistician; 1.2 Historical Anecdotes Relating Statistics to Food Science and Nutrition; 1.3 Why Statistics, Experimental Design, and Epidemiology Matter; References; Chapter 2: Methods and Principles of Statistical Analysis; 2.1 Recommended Textbooks on Statistics; 2.1.1 Applied Statistics, Epidemiology, and Experimental Design; 2.1.2 Advanced Text on the Theoretical Foundation in Statistics; 2.2 Describing Data; 2.2.1 Categorical Data; 2.2.2 Numerical Data 2.2.3 Other Types of Data2.3 Summarizing Data; 2.3.1 Contingency Tables (Cross Tabs) for Categorical Data; 2.3.2 The Most Representative Value of Continuous Data; 2.3.3 Spread and Variation of Continuous Data; 2.4 Descriptive Plots; 2.4.1 Bar Chart; 2.4.2 Histograms; 2.4.3 Box Plots; 2.4.4 Scatterplots; 2.4.5 Line Plots; 2.5 Statistical Inference (the p -Value Stuff); 2.6 Overview of Classical Statistical Tests; 2.7 Overview of Statistical Models; References; Chapter 3: Applying Statistics to Food Quality; 3.1 The Concept of Food Quality; 3.2 Measuring Quality Quantitatively 3.3 Statistical Process Control3.3.1 The Foundation of Statistical Process Control; 3.3.2 Control Charts; 3.3.3 The Statistics of Six Sigma;

3.3.4 Multivariate Statistical Process Control; 3.4 Statistical Assessment of Sensory Data; 3.4.1 Methods in Sensory Evaluation; 3.4.2 Statistical Assessment of Differences Between Foods; Box 3.1 Common methods for discrimination testing are paired comparison, duo-trio test, and the triangle test. Since the outcome is whether samples are selected, binomial (or chi-squared) tests are applicable as shown in the examples
3.4.3 Statistical Assessment of Similarities Between Foods3.5 Statistical Assessment of Shelf Life; 3.5.1 Shelf Life and Product Quality; 3.5.2 Detection of Shelf Life; 3.5.3 Statistical Assessment of Shelf Life: Food Survival Analysis; References; Chapter 4: Nutritional Epidemiology and Health Effects of Foods; 4.1 Food: The Source of Health and Disease; 4.2 Epidemiological Principles and Designs; 4.2.1 Clinical and Epidemiological Research Strategies; 4.2.2 Clinical and Epidemiological Study Designs; 4.3 Methods to Assess Food Intake; 4.4 Epidemiological Use of Multiple Regression Models
4.4.1 Adjusting for ConfoundersBox 4.1 Causal relationship between exposure, confounders, and outcome and the interpretation of relevant regression models; 4.4.2 Assessment of Effect Modi fi cation (Interaction); 4.4.3 Intermediate Variables in the Causal Pathway; Box 4.2 Causal relationship between exposure, confounders, indirect effects in the causal pathway, and outcome and the interpretation of relevant regression models; References; Chapter 5: Application of Multivariate Analysis: Bene fi ts and Pitfalls; 5.1 Introduction of Multivariate Statistics in Food Science
5.2 Principal Component Analysis or Factor Analysis: When and Where

Sommario/riassunto

Many statistical innovations are linked to applications in food science. For example, the student t-test (a statistical method) was developed to monitor the quality of stout at the Guinness Brewery and multivariate statistical methods are applied widely in the spectroscopic analysis of foods. Nevertheless, statistical methods are most often associated with engineering, mathematics, and the medical sciences, and are rarely thought to be driven by food science. Consequently, there is a dearth of statistical methods aimed specifically at food science, forcing researchers to utilize methods intended for other disciplines. The objective of this Brief will be to highlight the most needed and relevant statistical methods in food science and thus eliminate the need to learn about these methods from other fields. All methods and their applications will be illustrated with examples from research literature. .