

1. Record Nr.	UNINA9910807726803321
Autore	Beh Eric J.
Titolo	An introduction to correspondence analysis // Eric J. Beh and Rosaria Lombardo
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, Incorporated, , [2021] ©2021
ISBN	1-119-04196-1 1-119-04448-0
Descrizione fisica	1 online resource (243 pages) : illustrations
Collana	Wiley Series in Probability and Statistics
Disciplina	519.537
Soggetti	Correspondence analysis (Statistics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover -- Title Page -- Copyright -- Contents -- Preface -- Chapter 1 Introduction -- 1.1 Data Visualisation -- 1.2 Correspondence Analysis in a "Nutshell" -- 1.3 Data Sets -- 1.3.1 Traditional European Food Data -- 1.3.2 Temperature Data -- 1.3.3 Shoplifting Data -- 1.3.4 Alligator Data -- 1.4 Symmetrical Versus Asymmetrical Association -- 1.5 Notation -- 1.5.1 The Twoway Contingency Table -- 1.5.2 The Threeway Contingency Table -- 1.6 Formal Test of Symmetrical Association -- 1.6.1 Test of Independence for Twoway Contingency Tables -- 1.6.2 The Chisquared Statistic for a Twoway Table -- 1.6.3 Analysis of the Traditional European Food Data -- 1.6.4 The Chi squared Statistic for a Threeway Table -- 1.6.5 Analysis of the Alligator Data -- 1.7 Formal Test of Asymmetrical Association -- 1.7.1 Test of Predictability for Twoway Contingency Tables -- 1.7.2 The Goodman-Kruskal tau Index -- 1.7.3 Analysis of the Traditional European Food Data -- 1.7.4 Test of Predictability for Threeway Contingency Tables -- 1.7.5 Marcotorchino's Index -- 1.7.6 Analysis of the Alligator Data -- 1.7.7 The Gray-Williams Index and Delta Index -- 1.8 Correspondence Analysis and R -- 1.9 Overview of the Book -- Part I Classical Analysis of Two Categorical Variables -- Chapter 2 Simple Correspondence Analysis -- 2.1 Introduction -- 2.2 Reducing Multi dimensional Space -- 2.2.1 Profiles Cloud of Points -- 2.2.2 Profiles for the Traditional European Food Data -- 2.2.3 Weighted Centred Profiles

-- 2.3 Measuring Symmetric Association -- 2.3.1 The Pearson Ratio -- 2.3.2 Analysis of the Traditional European Food Data -- 2.4 Decomposing the Pearson Residual for Nominal Variables -- 2.4.1 The Generalised SVD of  $ij_1$  -- 2.4.2 SVD of the Pearson Ratio's -- 2.4.3 GSVD and the Traditional European Food Data -- 2.5 Constructing a LowDimensional Display. 2.5.1 Standard Coordinates -- 2.5.2 Principal Coordinates -- 2.6 Practicalities of the LowDimensional Plot -- 2.6.1 The Two Dimensional Correspondence Plot -- 2.6.2 What is NOT Being Shown in a TwoDimensional Correspondence Plot? -- 2.6.3 The Three Dimensional Correspondence Plot -- 2.7 The Biplot Display -- 2.7.1 Definition -- 2.7.2 Isometric Biplots of the Traditional European Food Data -- 2.7.3 What is NOT Being Shown in a TwoDimensional Biplot? -- 2.8 The Case for No Visual Display -- 2.9 Detecting Statistically Significant Points -- 2.9.1 Confidence Circles and Ellipses -- 2.9.2 Confidence Ellipses for the Traditional European Food Data -- 2.10 Approximate pvalues -- 2.10.1 The Hypothesis Test and its pvalue -- 2.10.2 Pvalues and the Traditional European Food Data -- 2.11 Final Comments -- Chapter 3 NonSymmetrical Correspondence Analysis -- 3.1 Introduction -- 3.2 Quantifying Asymmetric Association -- 3.2.1 The Goodman-Kruskal tau Index -- 3.2.2 The Index and the Traditional European Food Data -- 3.2.3 Weighted Centred Column Profile -- 3.2.4 Profiles of the Traditional European Food Data -- 3.3 Decomposing  $ij_j$  for Nominal Variables -- 3.3.1 The Generalised SVD of  $ij_j$  -- 3.3.2 GSVD and the Traditional Food Data -- 3.4 Constructing a LowDimensional Display -- 3.4.1 Standard Coordinates -- 3.4.2 Principal Coordinates -- 3.5 Practicalities of the Low Dimensional Plot -- 3.5.1 The TwoDimensional Correspondence Plot -- 3.5.2 The ThreeDimensional Correspondence Plot -- 3.6 The Biplot Display -- 3.6.1 Definition -- 3.6.2 The Column Isometric Biplot for the Traditional Food Data -- 3.6.3 The ThreeDimensional Biplot -- 3.7 Detecting Statistically Significant Points -- 3.7.1 Confidence Circles and Ellipses -- 3.7.2 Confidence Ellipses for the Traditional Food Data -- 3.8 Final Comments.

Part II Ordinal Analysis of Two Categorical Variables -- Chapter 4 Simple Ordinal Correspondence Analysis -- 4.1 Introduction -- 4.2 A Simple Correspondence Analysis of the Temperature Data -- 4.3 On the Mean and Variation of Profiles with Ordered Categories -- 4.3.1 Profiles of the Temperature Data -- 4.3.2 Defining Scores -- 4.3.3 On the Mean of the Profiles -- 4.3.4 On the Variation of the Profiles -- 4.3.5 Mean and Variation of Profiles for the Temperature Data -- 4.4 Decomposing the Pearson Residual for Ordinal Variables -- 4.4.1 The Bivariate Moment Decomposition of  $ij_1$  -- 4.4.2 BMD and the Temperature Data -- 4.5 Constructing a LowDimensional Display -- 4.5.1 Standard Coordinates -- 4.5.2 Principal Coordinates -- 4.5.3 Practicalities of the Ordered Principal Coordinates -- 4.6 The Biplot Display -- 4.6.1 Definition -- 4.6.2 Ordered Column Isometric Biplot -- 4.6.3 Ordered Row Isometric Biplot -- 4.6.4 Ordered Isometric Biplots for the Temperature Data -- 4.7 Final Comments -- Chapter 5 Ordered Non symmetrical Correspondence Analysis -- 5.1 Introduction -- 5.2 The Goodman-Kruskal tau Index Revisited -- 5.3 Decomposing  $ij_j$  for Ordinal and Nominal Variables -- 5.3.1 The Hybrid Decomposition of  $ij_j$  -- 5.3.2 Hybrid Decomposition and the Shoplifting Data -- 5.4 Constructing a LowDimensional Display -- 5.4.1 Standard Coordinates -- 5.4.2 Principal Coordinates -- 5.5 The Biplot -- 5.5.1 An Overview -- 5.5.2 Column Isometric Biplot -- 5.5.3 Column Isometric Biplot of the Shoplifting Data -- 5.5.4 Row Isometric Biplot -- 5.5.5 Row Isometric Biplot of the Shoplifting Data -- 5.5.6 Distance Measures and

the Row Isometric Biplots -- 5.6 Some Final Words -- Part III Analysis of Multiple Categorical Variables -- Chapter 6 Multiple Correspondence Analysis -- 6.1 Introduction -- 6.2 Crisp Coding and the Indicator Matrix -- 6.2.1 Crisp Coding. 6.2.2 The Indicator Matrix -- 6.2.3 Crisp Coding and the Alligator Data -- 6.2.4 Application of Multiple Correspondence Analysis using the Indicator Matrix -- 6.3 The Burt Matrix -- 6.4 Stacking -- 6.4.1 A Definition -- 6.4.2 Stacking and the Alligator Data - Lake(Size) $\times$  Food -- 6.4.3 Stacking and the Alligator Data - Food(Size) $\times$  Lake -- 6.5 Final Comments -- Chapter 7 Multiway Correspondence Analysis -- 7.1 An Introduction -- 7.2 Pearson's Residual  $ijk_1$  and the Partition of  $X^2$  -- 7.2.1 The Pearson Residual -- 7.2.2 The Partition of  $X^2$  -- 7.2.3 Partition of  $X^2$  for the Alligator Data -- 7.3 Symmetric Multiway Correspondence Analysis -- 7.3.1 Tucker3 Decomposition of  $ijk_1$  -- 7.3.2 T3D and the Analysis of Two Variables -- 7.3.3 On the Choice of the Number of Components -- 7.3.4 Tucker3 Decomposition of  $ijk_1$  and the Alligator Data -- 7.4 Constructing a LowDimensional Display -- 7.4.1 Principal Coordinates -- 7.4.2 The Interactive Biplot -- 7.4.3 ColumnTube Interactive Biplot for the Alligator Data -- 7.4.4 Row Interactive Biplot for the Alligator Data -- 7.5 The Marcotorchino Residual  $ijj,k$  and the Partition of  $M$  -- 7.5.1 The Marcotorchino Residual -- 7.5.2 The Partition of  $M$  -- 7.5.3 Partition of  $M$  for the Alligator Data -- 7.6 Nonsymmetrical Multiway Correspondence Analysis -- 7.6.1 Tucker3 Decomposition of  $ijj,k$  -- 7.6.2 Tucker3 Decomposition of  $ijj,k$  and the Alligator Data -- 7.7 Constructing a LowDimensional Display -- 7.7.1 On the Choice of Coordinates -- 7.7.2 Column-Tube Interactive Biplot for the Alligator Data -- 7.8 Final Comments -- References -- Author Index -- Subject Index -- EULA.

---