

Subject Index

a

- alligator data
 - analysis of 16–17
 - asymmetrical association 20
 - column-tube interactive biplot for 181–185, 195–199
 - crisp coding 147–148
 - data sets 7–8
 - multi-way correspondence analysis 171–175
 - non-symmetrical multi-way
 - correspondence analysis 193–194
 - partition of τ_M 190–191
 - partition of X^2 165–166
 - stacking 156–161
 - symmetrical association 9, 16–17
- asymmetrical association
 - alligator data 20
 - categorical variables 7
 - Goodman–Kruskal tau index 17–18, 72
 - Gray–Williams index and delta index 21–22
 - Marcotorchino’s index 19–20
 - non-symmetrical correspondence analysis 72–75
 - τ index 72–73
 - test of predictability
 - for three-way contingency tables 19
 - for two-way contingency tables 17
 - traditional European food data 18, 73–75
 - weighted centred column profile 73

b

- beta scaling 83–85, 89–91, 123, 136, 138, 181–182, 185, 195–196
- biplot coordinates 59, 63, 89, 120, 135, 141, 179, 181, 184, 186, 195
- biplot display 26
 - column isometric biplot 59–60, 135
 - column isometric biplot of shoplifting data 135–137
 - column isometric biplot for traditional food data 90–91
 - column-tube interactive biplot 176–179, 181–185, 188, 193–199
- isometric biplots of traditional European food data 60–62
- ordered column isometric biplot 120
- ordered isometric biplots for temperature data 121–124
- ordered row isometric biplot 120–121
- principal coordinate 60
- row interactive biplot 176, 179–181, 185–188
- row isometric biplot 60, 137
- row isometric biplot of shoplifting data 137–140
- three-dimensional biplot 91–92
- two-dimensional biplot 63
- bivariate moment decomposition (BMD)
 - see decomposition methods
- Burt matrix 146, 153
 - alligator data 153
 - inertia values 154–155

Burt matrix (*contd.*)

- multiple correspondence analysis
153–154
- Pearson chi-squared statistic 155–156
- three-dimensional correspondence plot
154
- two-dimensional correspondence plot
154

C

- canonical correlation analysis 31
- canonical decomposition (CANDECOMP) *see*
decomposition methods
- chi-squared statistic 1, 13, 35, 43–44, 164
 - for three-way table 15–16
 - for two-way table 13
 - weighted centred profiles 35, 36
- cloud of points 32, 33
- column isometric biplot 59, 135
 - non-symmetrical correspondence analysis
90–91
 - ordered non-symmetrical correspondence
analysis 135–137
 - simple correspondence analysis
59–60
 - simple ordinal correspondence analysis
120
- column-tube interactive biplot 176
 - alligator data 181–185, 195–199
 - non-symmetrical multi-way
correspondence analysis 195, 196,
198
 - principal coordinates 182–183, 197
 - row standard coordinates 195, 196
 - symmetric multi-way correspondence
analysis 181–182, 184–185
- commercial packages 25
- computing - other
 - DtmVic5.6 25
 - Minitab 25
 - PAST (PAleontological STatistics) 25
 - SAS 25
 - SPSS 25
 - 3WayPack 25
 - XLStat 25

computing - R

- ade4 22
- anacor 22
- ca 22
- cabootcrs 22
- CAinterprTools 22
- CAvariants 24, 25
- CA3variants 24–25, 172
- cncaGUI 22
- dualScale 31, 145
- ExPosition 22
- FactoMineR 22
- Homals 22
- MASS 22
- MCAvariants 24, 25
- Ptak 22
- vegan 22
- confidence regions
 - confidence circles 64–65, 69, 92–93, 124
 - confidence ellipses 64–69, 70, 92–96,
124
- coordinate systems
 - biplot coordinates 59, 63, 89, 120, 135,
141, 179, 181, 184, 186, 195
 - polynomial principal coordinates
116
 - principal coordinates 117, 47–50, 60,
79–82, 116–119, 134, 175
 - standard coordinates 46–47, 79, 115–116,
133–135, 137
- contingency table
 - multi-way contingency table 10, 24, 27,
145–146, 161, 163
 - three-way contingency table 19
 - chi-squared statistic 15–16
 - delta index 21–22
 - Marcotorchino index 19–20
 - Gray–Williams index 21–22
 - test of independence 19
 - two-way contingency tables 10, 11
 - chi-squared statistic 13
 - test of independence 12
 - test of predictability 17
- core array 168, 171, 173–175, 181, 182, 186,
192–195

- correspondence analysis family
 correspondence analysis (CA) 3–4, 7, 9, 22–25
 doubly ordered correspondence analysis (DOCA) 24, 102, 129
 doubly ordered non-symmetrical correspondence analysis (DONSCA) 24, 141
 joint correspondence analysis (JCA) 24
 multiple correspondence analysis (MCA) 23–24, 27, 145–161
 multi-way correspondence analysis (MWCA) 27, 161, 164–199
 non-symmetrical correspondence analysis (NSCA) 22, 26, 70–97, 164
 non-symmetrical multi-way correspondence analysis 164, 191–194, 199
 ordered non-symmetrical correspondence analysis (ONSCA) 126–134
 simple correspondence analysis 23, 26, 31–70
 simple ordinal correspondence analysis 102–124
 singly ordered correspondence analysis (SOCA) 24, 102
 singly ordered non-symmetrical correspondence analysis (SONSCA) 7, 24, 102, 125, 128
 correspondence factor analysis 31
 correspondence plot 26, 42, 47
 crisp coding
 alligator data 147–148
 definition 146
- d**
 data cube form 161, 163, 167
 data sets
 alligator data 7–8
 shoplifting data 6–7
 temperature data 6
 traditional European food data 4
 decomposition methods 101, 126, 128–129, 161
 bivariate moment decomposition (BMD) 111–115
 canonical decomposition (CANDECOMP) 163
 generalised singular value decomposition (GSVD) 41, 41–46, 71, 76–79, 125
 hybrid decomposition (HD) 26, 125, 128–133
 parallel factor (or PARAFAC) decomposition 163
 singular value decomposition (SVD) 26, 44, 163
 Tucker3 decomposition (T3D) 27, 167–175, 191–194
 delta index 21–22, 195
 delta residual 20
 dual scaling 31, 145
- f**
 fuzzy coding 146, 151
- g**
 generalised singular value decomposition (GSVD) *see* decomposition methods
 Goodman–Kruskal residual 17–18
 Goodman–Kruskal tau Index 17–18, 73, 126–128
 Gray–Williams index 21–22
 Gray–Williams residual 20
 Guttman scaling 31
- h**
 homogeneity analysis 31, 145
 hybrid decomposition (HD) *see* decomposition methods
 hyper-cube form 161, 163
- i**
 index of predictability *see* Goodman–Kruskal tau Index
 indicator matrix
 description 146–147
 inertia values from correspondence analysis 151

indicator matrix (*contd.*)
 multiple correspondence analysis,
 application of 148–151
 three-dimensional correspondence plot
 150
 two-dimensional correspondence plot
 149

interactive biplot 175
 column-tube interactive biplot
 176–179
 row interactive biplot 176, 179–181
 isometric biplot 176

l

lambda scaling 83
 low-dimensional display
 multi-way correspondence analysis
 on the choice of coordinates
 194–195
 column-tube interactive biplot for
 alligator data 181–185, 195–199
 interactive biplot 175–181
 principal coordinates 175
 row interactive biplot for alligator data
 185–188
 non-symmetrical correspondence analysis
 principal coordinates 79–82
 standard coordinates 79
 ordered non-symmetrical correspondence
 analysis 133–134
 principal coordinates 134
 standard coordinates 133–134
 simple correspondence analysis
 principal coordinates 47–50
 standard coordinates 46–47
 simple ordinal correspondence analysis
 practicalities of ordered principal
 coordinates 119
 principal coordinates 116–119
 standard coordinates 115–116

m

Marcotorchino's residual 19, 164, 188–189,
 191, 193, 199
 Marcotorchino's index 19–20

n

nested-mode biplot 175, 176
 nominal categorical variables 22, 26, 27, 31,
 42, 128, 134, 161, 165, 167

o

optimal correspondence plot 42, 82,
 84–85
 optimal scaling 31, 145
 optimal scoring 145
 ordered categorical variables 101
 defining scores 105–107
 mean and variation of profiles for
 temperature data 108–110
 on mean of profiles 107–108
 profiles of temperature data 104–105
 on variation of profiles 108

p

parallel factor (or PARAFAC) decomposition
 see decomposition methods
 partition of
 chi-squared statistic 165–166
 Marcotorchino's index 188–190
 Pearson ratio 12, 16, 39–40, 43, 44
 Pearson's residual 12, 16, 39–46,
 164–165
 predictor variable 97
 principal component analysis of categorical
 data 31
 profile
 centred profile 35, 37, 39, 82, 141
 definition 32, 33
 weighted centred profile 33, 35–39, 73, 75,
 105
 property of distributional equivalence 82,
 141
 p-values 69–70

r

reciprocal averaging 31, 108
 response variable 97
 row isometric biplots 135
 ordered non-symmetrical correspondence
 analysis 137–141

simple correspondence analysis 60
 simple ordinal correspondence analysis
 120–121

S

singly ordered contingency table 125
 singular value decomposition (SVD) *see*
 decomposition methods
 Spearman's rank correlation 112
 stacking 156–161
 super-indicator matrix 147
 symmetrical association
 vs. asymmetrical association 8–10
 formal test of
 analysis of alligator data 9, 16–17
 analysis of traditional European food
 data 13–15
 chi-squared statistic for three-way table
 15–16
 chi-squared statistic for two-way table
 13

test of independence for two-way
 contingency tables 12
 simple correspondence analysis
 analysis of traditional European food
 data 40–41
 Pearson ratio 39–40

t

total inertia 44, 50, 126
 traditional European food data 4
 asymmetrical association 18
 data sets 4
 non-symmetrical correspondence analysis
 72–73, 73–75
 profiles for 33, 34
 simple correspondence analysis 33, 34,
 40–41, 44–46, 60–62, 65–69
 symmetrical association 13–15, 40–41
 tube categories 11
 Tucker3 decomposition (T3D)
see decomposition methods

