Genstat 64-bit Release 22.1 ( PC/Windows 11) 30 September 2022 15:19:16

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Genstat Twenty-second Edition

Genstat Procedure Library Release PL30.1

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1 SET [WORKINGDIRECTORY='C:/Users/mgr/OneDrive - University of St Andrews/Desktop/Final Multiv'; DIAGNOSTIC=messages]  
 2 "Data taken from file: '\  
 -3 C:/Users/mgr/OneDrive - University of St Andrews/Desktop/Final Multiv/Males.gsh\  
 -4 '"  
 5 DELETE [REDEFINE=yes] \_stitle\_: TEXT \_stitle\_  
 6 READ [PRINT=\*; SETNVALUES=yes] \_stitle\_  
 10 PRINT [IPRINT=\*] \_stitle\_; JUST=left

Data imported from Excel file: C:\Users\mgr\OneDrive - University of St Andrews\Desktop\Final Multiv\Males.xlsx

on: 30-Sep-2022 14:56:31

taken from sheet "Males", cells A2:L174

11 DELETE [REDEFINE=yes] Population,Line,CCRT\_M,CSM\_M,DT\_A\_M,DW\_M,HSM\_M,LS\_M,\  
 12 SR\_M,TL\_M,Via\_NA,WA\_L\_M  
 13 UNITS [NVALUES=\*]  
 14 DELETE [REDEFINE=yes] Population  
 15 FACTOR [MODIFY=no; NVALUES=173; LEVELS=9; LABELS=!t('AK','GI','KA','MA',\  
 16 'MU','RE','UM','VA','YE'); REFERENCE=1] Population  
 17 READ Population; FREPRESENTATION=ordinal

Identifier Values Missing Levels

Population 173 0 9

23 DELETE [REDEFINE=yes] Line  
 24 TEXT [NVALUES=173] Line  
 25 READ Line

Identifier Minimum Mean Maximum Values Missing

Line 173 0

42 DELETE [REDEFINE=yes] CCRT\_M  
 43 VARIATE [NVALUES=173] CCRT\_M  
 44 READ CCRT\_M

Identifier Minimum Mean Maximum Values Missing

CCRT\_M 1322 1610 2016 173 1

74 DELETE [REDEFINE=yes] CSM\_M  
 75 VARIATE [NVALUES=173] CSM\_M  
 76 READ CSM\_M

Identifier Minimum Mean Maximum Values Missing

CSM\_M 0.7235 1.043 1.426 173 1

106 DELETE [REDEFINE=yes] DT\_A\_M  
 107 VARIATE [NVALUES=173] DT\_A\_M  
 108 READ DT\_A\_M

Identifier Minimum Mean Maximum Values Missing

DT\_A\_M 223.3 236.1 255.9 173 2

138 DELETE [REDEFINE=yes] DW\_M  
 139 VARIATE [NVALUES=173] DW\_M  
 140 READ DW\_M

Identifier Minimum Mean Maximum Values Missing

DW\_M 0.2219 0.2660 0.3114 173 4

170 DELETE [REDEFINE=yes] HSM\_M  
 171 VARIATE [NVALUES=173] HSM\_M  
 172 READ HSM\_M

Identifier Minimum Mean Maximum Values Missing

HSM\_M 198.2 323.1 444.2 173 2

202 DELETE [REDEFINE=yes] LS\_M  
 203 VARIATE [NVALUES=173] LS\_M  
 204 READ LS\_M

Identifier Minimum Mean Maximum Values Missing

LS\_M 37.69 50.92 61.75 173 2

232 DELETE [REDEFINE=yes] SR\_M  
 233 VARIATE [NVALUES=173] SR\_M  
 234 READ SR\_M

Identifier Minimum Mean Maximum Values Missing

SR\_M 49.81 67.69 96.45 173 2

264 DELETE [REDEFINE=yes] TL\_M  
 265 VARIATE [NVALUES=173] TL\_M  
 266 READ TL\_M

Identifier Minimum Mean Maximum Values Missing

TL\_M 788.9 843.6 887.7 173 38

290 DELETE [REDEFINE=yes] Via\_NA  
 291 VARIATE [NVALUES=173] Via\_NA  
 292 READ Via\_NA

Identifier Minimum Mean Maximum Values Missing

Via\_NA 0.6104 0.9568 1.251 173 1

322 DELETE [REDEFINE=yes] WA\_L\_M  
 323 VARIATE [NVALUES=173] WA\_L\_M  
 324 READ WA\_L\_M

Identifier Minimum Mean Maximum Values Missing

WA\_L\_M 2360 2480 2617 173 1

354 %PostMessage 1129; 0; 10000001 "Sheet update completed"  
 355 "Data taken from file: '\  
-356 C:/Users/mgr/OneDrive - University of St Andrews/Desktop/Final Multiv/Males.gsh\  
-357 '"  
 358 DELETE [REDEFINE=yes] \_stitle\_: TEXT \_stitle\_  
 359 READ [PRINT=\*; SETNVALUES=yes] \_stitle\_  
 363 PRINT [IPRINT=\*] \_stitle\_; JUST=left

Data imported from Excel file: C:\Users\mgr\OneDrive - University of St Andrews\Desktop\Final Multiv\Males.xlsx

on: 30-Sep-2022 14:56:31

taken from sheet "Males", cells A2:L174

364 UNITS [NVALUES=\*]  
 365 VARIATE [NVALUES=173] CCRT\_M  
 366 READ CCRT\_M

Identifier Minimum Mean Maximum Values Missing

CCRT\_M -2.280 0.0000 3.204 173 1

410 VARIATE [NVALUES=173] CSM\_M  
 411 READ CSM\_M

Identifier Minimum Mean Maximum Values Missing

CSM\_M -2.432 0.0000 2.915 173 1

455 VARIATE [NVALUES=173] DT\_A\_M  
 456 READ DT\_A\_M

Identifier Minimum Mean Maximum Values Missing

DT\_A\_M -1.716 2.69E-14 2.665 173 2

500 VARIATE [NVALUES=173] DW\_M  
 501 READ DW\_M

Identifier Minimum Mean Maximum Values Missing

DW\_M -2.731 0.0000 2.814 173 4

545 VARIATE [NVALUES=173] HSM\_M  
 546 READ HSM\_M

Identifier Minimum Mean Maximum Values Missing

HSM\_M -3.052 0.0000 2.960 173 2

590 VARIATE [NVALUES=173] LS\_M  
 591 READ LS\_M

Identifier Minimum Mean Maximum Values Missing

LS\_M -2.649 0.0000 2.168 173 2

635 VARIATE [NVALUES=173] SR\_M  
 636 READ SR\_M

Identifier Minimum Mean Maximum Values Missing

SR\_M -2.240 0.0000 3.604 173 2

680 VARIATE [NVALUES=173] TL\_M  
 681 READ TL\_M

Identifier Minimum Mean Maximum Values Missing

TL\_M -2.437 0.0000 1.964 173 38

718 VARIATE [NVALUES=173] Via\_NA  
 719 READ Via\_NA

Identifier Minimum Mean Maximum Values Missing

Via\_NA -3.542 0.0000 3.013 173 1

763 VARIATE [NVALUES=173] WA\_L\_M  
 764 READ WA\_L\_M

Identifier Minimum Mean Maximum Values Missing

WA\_L\_M -2.444 2.98E-14 2.806 173 1

808 %PostMessage 1129; 0; 10000001 "Sheet update completed"  
 809 DISCRIMINATE [PRINT=counts,newgroups,correlations,ccorrelations,gdistances,table; PLOT=means,\  
 810 mlabels,scores,polygon; XROOT=1; YROOT=2; REALLOCATE=no] !p(CCRT\_M,CSM\_M,DT\_A\_M,DW\_M,\  
 811 HSM\_M,LS\_M,SR\_M,TL\_M,Via\_NA,WA\_L\_M); GROUPS=Population

Discriminant analysis

Count of units with a complete set of variables

Counts

Population

AK 19

GI 11

KA 13

MA 17

MU 17

RE 11

UM 12

VA 19

YE 15

Nobserved 134

Canonical Correlation Coefficients

1 0.8188

2 0.8092

3 0.6380

4 0.5698

5 0.4746

6 0.3632

7 0.2696

8 0.0588

Correlations between DATA variates and discriminant functions

Scores Scores[1] Scores[2] Scores[3] Scores[4] Scores[5]

CCRT\_M -0.0286 0.7276 0.4070 0.1435 0.2691

CSM\_M -0.3555 0.3085 -0.1181 0.2464 -0.3165

DT\_A\_M 0.1794 -0.0818 0.5283 0.4221 -0.1650

DW\_M 0.1026 -0.2012 0.0326 -0.3417 -0.2855

HSM\_M 0.3558 -0.1214 -0.4749 0.2283 0.4994

LS\_M 0.3689 0.0987 -0.2812 0.0117 -0.4839

SR\_M 0.4536 -0.1390 0.1048 -0.0126 -0.4624

TL\_M -0.2173 -0.4194 0.1932 0.6436 -0.0217

Via\_NA 0.6735 -0.0428 -0.1687 -0.0119 0.1226

WA\_L\_M -0.0174 -0.4784 0.5355 -0.3424 0.0136

Scores Scores[6] Scores[7] Scores[8]

CCRT\_M 0.3231 0.0440 0.2428

CSM\_M 0.2098 0.7031 -0.1059

DT\_A\_M -0.3689 0.2218 0.0111

DW\_M 0.1984 0.2274 0.4058

HSM\_M 0.0062 -0.0130 0.4244

LS\_M -0.0870 -0.1557 0.5346

SR\_M 0.6970 -0.0912 0.0237

TL\_M 0.0537 0.1849 0.3229

Via\_NA -0.1273 0.3898 -0.2178

WA\_L\_M 0.3023 0.3825 0.3244

Intergroup distances - Mahalanobis (D-squared)

AK 0.000

GI 12.517 0.000

KA 8.089 11.919 0.000

MA 16.948 19.911 13.237 0.000

MU 3.254 8.383 7.383 14.967 0.000

RE 16.293 11.326 15.048 5.890 11.516

UM 7.874 12.907 9.251 6.981 6.902

VA 9.255 13.868 9.947 3.769 7.139

YE 23.156 9.462 17.919 17.697 19.647

AK GI KA MA MU

RE 0.000

UM 7.093 0.000

VA 4.932 6.216 0.000

YE 19.867 24.053 16.930 0.000

RE UM VA YE

Original group and new allocation of units

units 1 2 3 4 5

Population YE YE YE YE YE

Tallocate YE YE YE YE YE

units 6 7 8 9 10

Population YE YE YE YE YE

Tallocate YE YE

units 11 12 13 14 15

Population YE YE YE YE YE

Tallocate YE YE YE YE

units 16 17 18 19 20

Population YE YE YE YE YE

Tallocate YE YE YE YE

units 21 22 23 24 25

Population RE RE RE RE RE

Tallocate RE RE RE KA

units 26 27 28 29 30

Population RE RE RE RE RE

Tallocate RE UM RE RE

units 31 32 33 34 35

Population RE RE RE RE RE

Tallocate RE RE RE

units 36 37 38 39 40

Population RE RE GI GI GI

Tallocate GI RE

units 41 42 43 44 45

Population GI GI GI GI GI

Tallocate GI GI GI

units 46 47 48 49 50

Population GI GI GI GI GI

Tallocate KA GI GI GI

units 51 52 53 54 55

Population GI GI MU MU MU

Tallocate GI GI MU MU

units 56 57 58 59 60

Population MU MU MU MU MU

Tallocate MU KA MU MU MU

units 61 62 63 64 65

Population MU MU MU MU MU

Tallocate MU MU MU MU

units 66 67 68 69 70

Population MU MU MU MU MU

Tallocate RE AK MU AK

units 71 72 73 74 75

Population MU MU MA MA MA

Tallocate MU KA VA MA

units 76 77 78 79 80

Population MA MA MA MA MA

Tallocate MA MA YE MA

units 81 82 83 84 85

Population MA MA MA MA MA

Tallocate MA MA MA RE

units 86 87 88 89 90

Population MA MA MA MA MA

Tallocate GI MA MA MA MA

units 91 92 93 94 95

Population MA MA UM UM UM

Tallocate MA MA MA UM

units 96 97 98 99 100

Population UM UM UM UM UM

Tallocate AK VA UM UM

units 101 102 103 104 105

Population UM UM UM UM UM

Tallocate UM UM

units 106 107 108 109 110

Population UM UM UM UM UM

Tallocate UM UM UM

units 111 112 113 114 115

Population UM KA KA KA KA

Tallocate UM KA VA KA

units 116 117 118 119 120

Population KA KA KA KA KA

Tallocate AK KA UM KA KA

units 121 122 123 124 125

Population KA KA KA KA KA

Tallocate KA

units 126 127 128 129 130

Population KA KA KA KA KA

Tallocate KA KA KA KA

units 131 132 133 134 135

Population KA VA VA VA VA

Tallocate VA VA VA VA

units 136 137 138 139 140

Population VA VA VA VA VA

Tallocate VA UM VA MU VA

units 141 142 143 144 145

Population VA VA VA VA VA

Tallocate VA RE MU VA

units 146 147 148 149 150

Population VA VA VA VA VA

Tallocate RE VA VA YE VA

units 151 152 153 154 155

Population VA AK AK AK AK

Tallocate VA MU AK AK AK

units 156 157 158 159 160

Population AK AK AK AK AK

Tallocate UM MU AK AK AK

units 161 162 163 164 165

Population AK AK AK AK AK

Tallocate KA AK AK

units 166 167 168 169 170

Population AK AK AK AK AK

Tallocate VA AK MU AK AK

units 171 172 173

Population AK AK AK

Tallocate AK AK

Table of counts for allocation of training units

Counts

Population AK GI KA MA MU

Tallocate

AK 13 . 1 . 2

GI . 9 . 1 .

KA 1 1 10 . 2

MA . . . 13 .

MU 3 . . . 12

RE . 1 . 1 1

UM 1 . 1 . .

VA 1 . 1 1 .

YE . . . 1 .

Total 19 11 13 17 17

Population RE UM VA YE Total

Tallocate

AK . 1 . . 17

GI . . . . 10

KA 1 . . . 15

MA . 1 . . 14

MU . . 2 . 17

RE 9 . 2 . 14

UM 1 9 1 . 13

VA . 1 13 . 17

YE . . 1 15 17

Total 11 12 19 15 134

Unknown cell

Counts 39

