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 Correspondence Analysis script by Gianmarco ALBERTI
              (gianmarcoalberti@tin.it)
      (www.xoomer.alice.it/gianmarco.alberti)

script executed on Sun Sep 29 08:57:01 2013
number of dimensions to be analyzed selected by the user: 2

 * Start of Correspondence Analysis output *
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=====================================================================
Contingency Table
=====================================================================
           Artiodactyl Lagomorph Aves Carnivore dummy_sp  Sum
roomblock1         195       590   42        21       33  881
roomblock2         307       215   17         6       21  566
roomblock3         414       284   12         2       27  739
roomblock4          51        68    5         0        5  129
roomblock5          58       107    3         1        7  176
roomblock6          81        96    6         4        7  194
Sum               1106      1360   85        34      100 2685

=====================================================================
Row profiles (%)
=====================================================================
           Artiodactyl Lagomorph Aves Carnivore dummy_sp
roomblock1       22.13     66.97 4.77      2.38     3.75
roomblock2       54.24     37.99 3.00      1.06     3.71
roomblock3       56.02     38.43 1.62      0.27     3.65
roomblock4       39.53     52.71 3.88      0.00     3.88
roomblock5       32.95     60.80 1.70      0.57     3.98
roomblock6       41.75     49.48 3.09      2.06     3.61
Sum              41.19     50.65 3.17      1.27     3.72

=====================================================================
Column profiles (%)
=====================================================================
           Artiodactyl Lagomorph  Aves Carnivore dummy_sp   Sum
roomblock1       17.63     43.38 49.41     61.76       33 32.81
roomblock2       27.76     15.81 20.00     17.65       21 21.08
roomblock3       37.43     20.88 14.12      5.88       27 27.52
roomblock4        4.61      5.00  5.88      0.00        5  4.80
roomblock5        5.24      7.87  3.53      2.94        7  6.55
roomblock6        7.32      7.06  7.06     11.76        7  7.23

=====================================================================
Association coefficients
=====================================================================
                    X^2 df P(> X^2)
Likelihood Ratio 277.64 20        0
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Pearson          265.43 20        0

Phi-Coefficient   : 0.314
Contingency Coeff.: 0.3
Cramer's V        : 0.157

=============================================================
Chi-square test
=============================================================

        Pearson's Chi-squared test

data:  mydata
X-squared = 265.4271, df = 20, p-value < 2.2e-16


=============================================================
Association between rows and columns
=============================================================

Total Inertia:
[1] 0.09885554

Square root of the Total Inertia:
[1] 0.314

note:
The square root of the Total Inertia may be interpreted as a correlation
coefficient (phi) between the rows and columns.
Any value greater 0.20 indicates important dependency (see also the bar
chart provided).

=============================================================
Correspondence Analysis summary
=============================================================

Principal inertias (eigenvalues):

 dim    value      %   cum%   scree plot
 1      0.094837  95.9  95.9  ************************
 2      0.003270   3.3  99.2  *
 3      0.000740   0.7 100.0
 4      8e-06000   0.0 100.0
        -------- -----
 Total: 0.098856 100.0


Rows:
    name   mass  qlt  inr    k=1 cor ctr    k=2 cor ctr
1 | rmb1 |  328 1000  527 | -398 998 548 |  -17   2  29 |
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2 | rmb2 |  211  998  157 |  264 946 154 |  -62  52 248 |
3 | rmb3 |  275  999  273 |  312 988 282 |   33  11  92 |
4 | rmb4 |   48  373    8 |  -20  25   0 |   74 348  81 |
5 | rmb5 |   66  978   32 | -151 477  16 |  154 501 478 |
6 | rmb6 |   72  605    4 |    2   0   0 |  -57 605  72 |

Columns:
    name   mass  qlt  inr    k=1 cor ctr    k=2 cor ctr
1 | Artd |  412 1000  541 |  360 999 563 |   -9   1  10 |
2 | Lgmr |  507 1000  338 | -255 989 349 |   27  11 114 |
3 | Aves |   32  914   53 | -345 717  40 | -181 197 317 |
4 | Crnv |   13  958   68 | -602 686  48 | -379 272 556 |
5 | dmm_ |   37  555    0 |  -11 203   0 |   14 351   2 |


================================================================
Guide to the number of Dimensions to take into account
================================================================

Any axis contributing more than the following percentage should be regarded
as important for the interpretation:
[1] 25

note:
For comparison, see the % provided in the Correspondence Analysis summary
(above) as well as the bar chart provided.
Besides this rule (i.e. the average rule) see also the Malinvaud's Test
table (belov) and plot

================================================================
Malinvaud's Test table
================================================================
     K Dimension  Eigen value   Chi-square df  p value
[1,] 0         1 9.483749e-02 265.42712774 20 0.000000
[2,] 1         2 3.269800e-03  10.78846592 12 0.547129
[3,] 2         3 7.403702e-04   2.00905163  6 0.918864
[4,] 3         4 7.879915e-06   0.02115757  2 0.989477


================================================================
Dimensionality of the solution. Average rule vs Malinvaud's test:
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The Average rule suggests an optimal dimensionality equal to 1 dimensions
The Malinvaud's test suggests an optimal dimensionality equal to 1
dimensions


================================================================
Major contributors to the definition of dimensions
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Any category whose contribution is greater than the following figures (in permills) contributes to the definition of the principal axes:

Rows contribution threshold
[1] 167

Columns contribution threshold
[1] 200

note:
You have to decide whether interpreting row categories in columns space, or viceversa.
Then, according to your decision, see which row or column categories have major contribution to the definition of the axes by locating the ones whose contribution is greater than the above threshold.
For categories' contribution, see: (a) the figures provided in the Correspondence Analysis summary (above) under the label 'ctr'; (b) the charts provided.
Besides, take into account the sign of the coordinates of the category points (under the 'k' label in the CA summary above) to understand which pole (positive and negative) of the axes the categories are actually determining.
Further, after having 'given names' to the axes according to the (row or column) categories relevant to their definition, take a look at the correlation bar chart (provided) in order to understand with which dimension the categories have strong correlation (see Greenacre 2007, p. 86).

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Clusters description (after FactoMineR)
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Row clusters

	Dim 1	Dim 2	clust
roomblock3	-0.311562861	-0.03304395	1
roomblock2	-0.263507372	0.06208084	1
roomblock6	-0.001558809	0.05712720	2
roomblock4	0.019758057	-0.07422214	2
roomblock5	0.150537788	-0.15436665	2
roomblock1	0.398012594	0.01696054	3

Column clusters

	Dim 1	Dim 2	clust
Artiodactyl	-0.36012507	0.009086081	1
dummy_sp	0.01072249	-0.014091479	2
Lagomorph	0.25545715	-0.027138625	3
Aves	0.34531946	0.180998832	3

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Carnivore    0.60153527  0.378928582     4



************************************************************
*             List of the Plots provided by this Script       *
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Window 1: -Bar chart of the strenght of the correlation between rows and
columns of the input crosstab
          -Bar chart of the percentage of Inertia explained by the
dimensions
          -Malinvaud Test Plot
          (note: the Script will plot only the Dimensions that are
significant according to the Malinvaud Test)

Window 2: -Bar charts of the Quality of the diplay of Row categories on
pairs of successive dimensions

Window 3: -Bar charts of the Quality of the diplay of Column categories on
pairs of successive dimensions

Window 4: -Bar charts of the Contribution of Row categories to the
Dimensions

Window 5: -Bar charts of the Contribution of Column categories to the
Dimensions

Window 6: -Bar charts of the Correlation of Row categories with the
Dimensions

Window 7: -Bar charts of the Correlation of Column categories with the
Dimensions

Window 8: -CA symmetric Map displaying both Row and Column points
          -CA symmetric Map for Rows only
          -CA symmetric Map for Columns only
          (note: the total number of charts in this Windows depends on the
number of Dimensions that have been plotted)

Window 9: -CA Standard Biplots

Windows from 10 onward: -2D CA Maps with clustering (for Rows)
                        -3D CA Map with clustering (for Rows)
                        -Clusters Tree with indication of group membership
(for Rows)
                        -2D CA Maps with clustering (for Columns)
                        -3D CA Map with clustering (for Columns)
                        -Clusters Tree with indication of group membership
(for Columns)
                        (note: the total number of 2D and 3D charts depends
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on the number of Dimensions that have been plotted)

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************************************************************
*                 Note on the Standard Biplot              *
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Rows in principal coordinates and columns in standard coordinates times square root of the mass. (Greenacre 2007, pp. 102, 234, 268, 270).
The lenght of each arrow joining the column points to the origin is related to the contribution that each column category makes to the principal axes.

See: Greenacre 2007, pp. 101-103, 234, 268, 270; Greenacre 2010, pp. 87-88; Greenacre 2013

Reference:
Greenacre 2007: Greenacre M., 'Correspondence Analysis in Practice'. Second Edition. Boca Raton-London-New York, Chapman&Hall/CRC
Greenacre 2010: Greenacre M., 'Biplots in Practice', Fundacion BBVA
Greenacre 2013: Greenacre M., 'Contribution Biplots', Journal of Computational and Graphical Statistics 22(1)

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 * End of Correspondence Analysis output *
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