Canonical Correlation Analysis

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R Markdown

#Libraries

```r
library(foreign)
library(CCA)

library(yacca)
library(MASS)

ccaWilks = function(set1, set2, cca)
{
  ev = ((1 - cca$cor^2))
  ev

  n = dim(set1)[1]
  p = length(set1)
  q = length(set2)
  k = min(p, q)
  m = n - 3/2 - (p + q)/2
  m

  w = rev(cumprod(rev(ev)))

  # initialize
  d1 = d2 = f = vector("numeric", k)

  for (i in 1:k)
  {
    s = sqrt((p^2 * q^2 - 4)/(p^2 + q^2 - 5))
    si = 1/s
    d1[i] = p * q
    d2[i] = m * s - p * q/2 + 1
    r = (1 - w[i]^si)/w[i]^si
    f[i] = r * d2[i]/d1[i]
    p = p - 1
    q = q - 1
  }

  pv = pf(f, d1, d2, lower.tail = FALSE)
  dmat = cbind(WilksL = w, F = f, df1 = d1, df2 = d2, p = pv)
}
```

#Read in Datasets

```
responses <- read.csv(file="responses.csv", header=TRUE, sep=",")
dim(responses)#1,010-Sample Size and 150 variables
```

```
## [1] 1010  150
```

```
#head(responses)
```

```
sum(is.na(responses))
```

```
## [1] 571
```

```
#571 total missing values (571 cells with missing data)
```

```
#Listwise Deletion
responses2 <- na.omit(responses)
```

```
#Check new data has no missing data
sum(is.na(responses2))
```

```
## [1] 0
```

```
music <- responses2[,1:19]
hobbies_interests <- responses2[,32:63]
```

This gives us the cannonical correlates, but no significance tests

```
c = cancor(music, hobbies_interests)
c
```

```
## $cor
##  [1] 0.73310410 0.60630173 0.51924975 0.46988302 0.38561624 0.36567119
##  [7] 0.34327690 0.32005284 0.30297490 0.28412238 0.27235387 0.23502670
## [13] 0.19348530 0.18873435 0.15920714 0.15688478 0.10624736 0.09376164
## [19] 0.08106277
```

```
## $xcenter
##                 Music Slow.songs.or.fast.songs                  Dance
##              4.759475                 3.294461               3.069971
##                  Folk                  Country         Classical.music
##              2.258017                 2.112245               2.981050
##               Musical                      Pop                    Rock
##              2.759475                 3.440233               3.787172
##       Metal.or.Hardrock                    Punk            Hiphop..Rap
##              2.355685                 2.451895               2.889213
##             Reggae..Ska               Swing..Jazz             Rock.n.roll
##              2.774052                 2.758017               3.161808
##           Alternative                   Latino           Techno..Trance
##              2.887755                 2.806122               2.298834
##                  Opera
##              2.153061
##
```

```
## $ycenter
##                History            Psychology              Politics
##               3.225948              3.139942              2.626822
##            Mathematics               Physics              Internet
##               2.400875              2.096210              4.188047
##                     PC     Economy.Management               Biology
##               3.135569              2.661808              2.620991
##              Chemistry               Reading             Geography
##               2.120991              3.199708              3.109329
##      Foreign.languages              Medicine                   Law
##               3.813411              2.475219              2.224490
##                   Cars       Art.exhibitions              Religion
##               2.634111              2.616618              2.228863
##    Countryside..outdoors              Dancing    Musical.instruments
##               3.613703              2.399417              2.301749
##                Writing         Passive.sport           Active.sport
##               1.865889              3.393586              3.236152
##               Gardening           Celebrities              Shopping
##               1.871720              2.319242              3.256560
## Science.and.technology               Theatre       Fun.with.friends
##               3.271137              3.023324              4.552478
##       Adrenaline.sports                  Pets
##               2.880466              3.323615
```
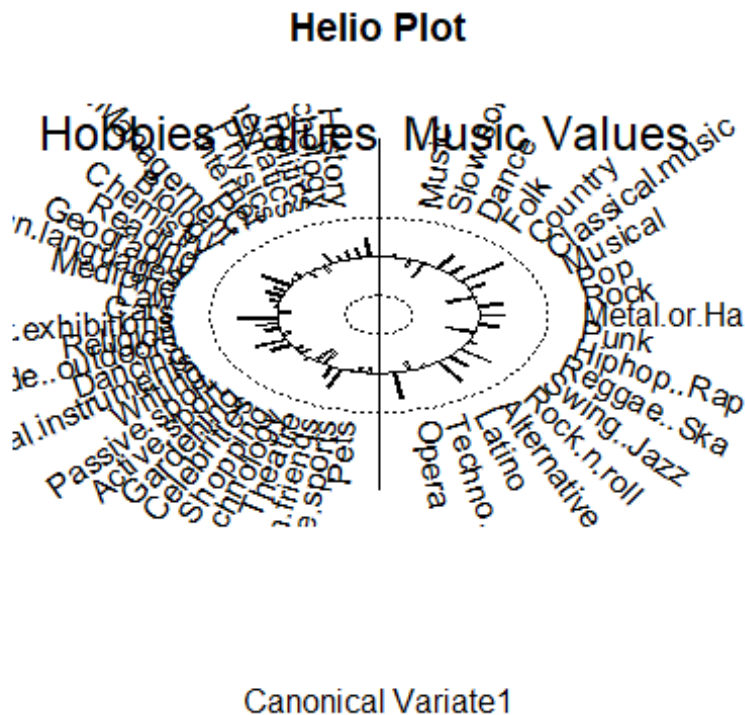
#Wilk's Lambda Test

```
cc_mm = cc(music, hobbies_interests)
wilks_mm = ccaWilks(music, hobbies_interests, cc_mm)
round(wilks_mm, 2)

##         WilksL    F df1       df2    p
##  [1,]    0.06 3.21 608 10482.67 0.00
##  [2,]    0.13 2.49 558 10000.08 0.00
##  [3,]    0.21 2.08 510  9513.34 0.00
##  [4,]    0.29 1.82 464  9022.12 0.00
##  [5,]    0.37 1.60 420  8526.00 0.00
##  [6,]    0.43 1.49 378  8024.53 0.00
##  [7,]    0.50 1.38 338  7517.19 0.00
##  [8,]    0.56 1.27 300  7003.38 0.00
##  [9,]    0.63 1.17 264  6482.39 0.03
## [10,]    0.69 1.06 230  5953.43 0.26
## [11,]    0.75 0.95 198  5415.59 0.68
## [12,]    0.81 0.82 168  4867.84 0.96
## [13,]    0.86 0.71 140  4309.02 1.00
## [14,]    0.89 0.65 114  3737.85 1.00
## [15,]    0.93 0.56  90  3152.99 1.00
## [16,]    0.95 0.50  68  2553.10 1.00
## [17,]    0.97 0.36  48  1937.03 1.00
## [18,]    0.98 0.34  30  1304.00 1.00
## [19,]    0.99 0.31  14   653.00 0.99
```

```
library(yacca)
c2 = cca(hobbies_interests,music)
c2

## also gives structural loadings.
## Canonical Correlation Analysis
##
## Canonical Correlations:
##        CV 1        CV 2        CV 3        CV 4        CV 5        CV 6        CV
7
## 0.73310410 0.60630173 0.51924975 0.46988302 0.38561624 0.36567119
0.34327690
##        CV 8        CV 9       CV 10       CV 11       CV 12       CV 13        CV
14
## 0.32005284 0.30297490 0.28412238 0.27235387 0.23502670 0.19348530
0.18873435
##       CV 15       CV 16       CV 17       CV 18       CV 19
## 0.15920714 0.15688478 0.10624736 0.09376164 0.08106277
##
## Aggregate Redundancy Coefficients (Total Variance Explained):
##   X | Y: 0.1282953
##   Y | X: 0.2028521

#CV1
helio.plot(c2, cv=1, x.name="Hobbies Values",
           y.name="Music Values")
```


Helio Plot

Hobbies Values Music Values

Canonical Variate1

```
c2$chisq
```

```
##         CV 1         CV 2         CV 3         CV 4         CV 5         CV 6
## 1843.229243 1335.151769 1033.174246  826.122539  661.718670  555.625899
##         CV 7         CV 8         CV 9        CV 10        CV 11        CV 12
##   461.031849  378.405946  307.188856  243.737815  188.269430  137.479107
##         CV 13        CV 14        CV 15        CV 16        CV 17        CV 18
##   100.033566   74.889219   50.986927   34.067972   17.645169   10.163740
##         CV 19
##     4.344693
```

```
c2$df
```

```
##   CV 1  CV 2  CV 3  CV 4  CV 5  CV 6  CV 7  CV 8  CV 9 CV 10 CV 11 CV 12 CV
## 13
##    608   558   510   464   420   378   338   300   264   230   198   168
## 140
## CV 14 CV 15 CV 16 CV 17 CV 18 CV 19
##    114    90    68    48    30    14
```

```
summary(c2)
```

```
##
## Canonical Correlation Analysis - Summary
##
##
## Canonical Correlations:
##
##         CV 1         CV 2         CV 3         CV 4         CV 5         CV 6         CV
## 7
## 0.73310410 0.60630173 0.51924975 0.46988302 0.38561624 0.36567119
## 0.34327690
##         CV 8         CV 9        CV 10        CV 11        CV 12        CV 13         CV
## 14
## 0.32005284 0.30297490 0.28412238 0.27235387 0.23502670 0.19348530
## 0.18873435
##        CV 15        CV 16        CV 17        CV 18        CV 19
## 0.15920714 0.15688478 0.10624736 0.09376164 0.08106277
##
## Shared Variance on Each Canonical Variate:
##
##          CV 1         CV 2         CV 3         CV 4         CV 5         CV 6
## 0.537441623 0.367601787 0.269620308 0.220790055 0.148699882 0.133715416
##          CV 7         CV 8         CV 9        CV 10        CV 11        CV 12
## 0.117839029 0.102433819 0.091793792 0.080725530 0.074176633 0.055237552
##          CV 13        CV 14        CV 15        CV 16        CV 17        CV 18
## 0.037436563 0.035620654 0.025346914 0.024612834 0.011288501 0.008791245
##          CV 19
## 0.006571172
##
## Bartlett's Chi-Squared Test:
```

```
##
##              rho^2       Chisq  df     Pr(>X)
## CV 1   5.3744e-01 1.8432e+03 608 < 2.2e-16 ***
## CV 2   3.6760e-01 1.3352e+03 558 < 2.2e-16 ***
## CV 3   2.6962e-01 1.0332e+03 510 < 2.2e-16 ***
## CV 4   2.2079e-01 8.2612e+02 464 < 2.2e-16 ***
## CV 5   1.4870e-01 6.6172e+02 420 4.372e-13 ***
## CV 6   1.3372e-01 5.5563e+02 378 6.655e-09 ***
## CV 7   1.1784e-01 4.6103e+02 338 9.325e-06 ***
## CV 8   1.0243e-01 3.7841e+02 300  0.001419 **
## CV 9   9.1794e-02 3.0719e+02 264  0.034801 *
## CV 10 8.0726e-02 2.4374e+02 230  0.254903
## CV 11 7.4177e-02 1.8827e+02 198  0.678525
## CV 12 5.5238e-02 1.3748e+02 168  0.959173
## CV 13 3.7437e-02 1.0003e+02 140  0.995633
## CV 14 3.5621e-02 7.4889e+01 114  0.998246
## CV 15 2.5347e-02 5.0987e+01  90  0.999699
## CV 16 2.4613e-02 3.4068e+01  68  0.999811
## CV 17 1.1288e-02 1.7645e+01  48  0.999982
## CV 18 8.7912e-03 1.0164e+01  30  0.999732
## CV 19 6.5712e-03 4.3447e+00  14  0.993010
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##
## Canonical Variate Coefficients:
##
##  X Vars:
##                              CV 1          CV 2          CV 3          CV
4
## History                0.172749150 -0.0687189267 -0.0085035918
0.273125670
## Psychology             0.002125842  0.0139385100 -0.1453600034
0.016793417
## Politics              -0.002310111 -0.0775809897  0.0284897419 -
0.086200414
## Mathematics           -0.047144486  0.0371269483  0.1227004570 -
0.013850970
## Physics                0.120232697 -0.0446476078 -0.0968617282
0.238605496
## Internet              -0.077974365  0.1594470889 -0.0003746427 -
0.178529012
## PC                    -0.041706964 -0.1688960094 -0.2810668499 -
0.008865608
## Economy.Management     0.005014450  0.0250641624  0.0043369450
0.079654584
## Biology               -0.019825147  0.0420829720 -0.1064019476
0.057709999
## Chemistry             -0.067927310 -0.0325064436  0.0336563366
0.159069572
```

```
## Reading                 0.118641213  0.0836466350 -0.1515446967 -
0.151826654
## Geography              -0.006950079 -0.0026405275 -0.0096143765
0.042563039
## Foreign.languages       0.077365531  0.1273004058 -0.1459485337 -
0.024847821
## Medicine                0.032505202  0.0712157280  0.0376103589 -
0.104575947
## Law                     0.007091897 -0.0002044281 -0.0019790173
0.011147340
## Cars                   -0.102899297  0.0218643062 -0.1536880874
0.117082230
## Art.exhibitions         0.281843295 -0.0800061663 -0.0975829846 -
0.196069574
## Religion                0.036877052  0.0593394300  0.0692630846
0.181709956
## Countryside..outdoors   0.033218928 -0.0300046284  0.1252887416
0.178684584
## Dancing                -0.188697927  0.2904413399 -0.0214081695
0.304838961
## Musical.instruments     0.209544568  0.0292136400 -0.0334868758
0.126905112
## Writing                -0.054164761 -0.0041024754 -0.0298378725 -
0.109009603
## Passive.sport          -0.006289547 -0.0058113443 -0.0697857571 -
0.055346870
## Active.sport           -0.055515407 -0.0794499265 -0.1674122480
0.032305481
## Gardening               0.024066410  0.0415481291  0.2410124972
0.204671184
## Celebrities            -0.111101445  0.1923745378 -0.1205561444 -
0.086470520
## Shopping               -0.162427967  0.1758382035  0.0626411192 -
0.049812560
## Science.and.technology  0.211793168  0.0474871356 -0.0206037223 -
0.162848033
## Theatre                 0.097878365  0.2652318812  0.1220711038 -
0.149504110
## Fun.with.friends        0.013056913  0.0643612642 -0.5741871848
0.069213420
## Adrenaline.sports      -0.079666650 -0.0609854575 -0.1405901050
0.010016735
## Pets                   -0.050524154 -0.0552037012 -0.0773316074 -
0.076190677
##                               CV 5         CV 6         CV 7         CV 8
## History                -0.116805519 -0.154594610  0.194528166 -0.09587220
## Psychology             -0.166078726 -0.014932131 -0.165216516 -0.06253474
## Politics                0.102918148 -0.034335651  0.143916996 -0.13065385
## Mathematics             0.036221912  0.309074967  0.029591991  0.13120688
## Physics                -0.062209410  0.021724062 -0.087767935 -0.30890226
```

```
## Internet               -0.473897964  0.065407513 -0.371301155 -0.04884857
## PC                      0.365604940 -0.120063059  0.061886192 -0.22865905
## Economy.Management       0.063293423  0.204810911 -0.131616576  0.02124679
## Biology                -0.253893053  0.164638714  0.177736978 -0.19849652
## Chemistry                0.095345563  0.072339119 -0.196624191 -0.06561758
## Reading                  0.129959122 -0.078331758 -0.185700107 -0.19242959
## Geography               -0.036084594 -0.054761398  0.055864566 -0.03169759
## Foreign.languages       -0.215636468 -0.038908017  0.215643329 -0.01053289
## Medicine                 0.242508985 -0.265659836 -0.179885223  0.09405262
## Law                      0.159487757 -0.075072400  0.071795084 -0.05034455
## Cars                     0.050207295 -0.055932597 -0.016058657 -0.13984993
## Art.exhibitions         -0.009382361  0.273715313  0.459606578  0.41040942
## Religion                -0.056749564  0.251318190  0.035840768 -0.02969999
## Countryside..outdoors   -0.025528274  0.013113777 -0.331776185  0.35651725
## Dancing                 -0.015829493 -0.094612357  0.085238857  0.04346393
## Musical.instruments     -0.117477985 -0.132084497 -0.108566148  0.08363559
## Writing                 -0.137422663  0.046684347 -0.124652641 -0.01087009
## Passive.sport            0.021003435  0.063890909 -0.064789095  0.05477913
## Active.sport             0.063205209  0.082144015 -0.125551305  0.10672155
## Gardening                0.151637670 -0.103455564  0.269375862 -0.15270693
## Celebrities              0.083373238  0.261724873  0.008300359  0.05939240
## Shopping                -0.109513810  0.036790216  0.216784045 -0.27290056
## Science.and.technology  -0.259487529  0.308778542 -0.003511273  0.01689305
## Theatre                  0.479014894 -0.021577067 -0.296051498 -0.18977531
## Fun.with.friends        -0.366250748 -0.489609802  0.007084335  0.12441845
## Adrenaline.sports        0.232584101  0.051563479  0.127284202  0.14945209
## Pets                     0.041175024  0.005131317 -0.197602614  0.11244406
##                              CV 9        CV 10        CV 11        CV 12
## History                  0.06760753 -0.088520191 -0.226717882  0.025331007
## Psychology              -0.04458195  0.400238324  0.152639390  0.179136413
## Politics                 0.09154783 -0.004157791 -0.093816627 -0.007570808
## Mathematics             -0.14364444  0.149261080 -0.202948559 -0.034680894
## Physics                  0.03178228 -0.285576351  0.478692728  0.203861367
## Internet                -0.04330982 -0.163192651 -0.370220318  0.126445124
## PC                       0.04765088  0.056279864  0.070611498 -0.044913152
## Economy.Management       0.03936472  0.012281790  0.169135485  0.045438372
## Biology                 -0.24201582  0.075243364 -0.127530421 -0.406813839
## Chemistry                0.08869931  0.178283959  0.212141358 -0.219367205
## Reading                 -0.06793588  0.161380405 -0.033349926 -0.217720307
## Geography               -0.37244262  0.146859807  0.040801980  0.092311866
## Foreign.languages       -0.14965702  0.065494893  0.105496500  0.128016599
## Medicine                 0.04345334 -0.346585549 -0.163629276  0.274798431
## Law                     -0.13156429  0.111982658  0.014839791  0.059954543
## Cars                     0.28068146  0.056034155 -0.033097338  0.012106734
## Art.exhibitions          0.03382687 -0.080786939  0.250151819 -0.109773977
## Religion                -0.02954483 -0.206103290 -0.237929121 -0.011401547
## Countryside..outdoors    0.22912478 -0.092118666  0.054834768 -0.013322533
## Dancing                 -0.04641442  0.137652314  0.227480396  0.168963770
## Musical.instruments      0.08433244  0.118881535 -0.223024752 -0.113355683
## Writing                  0.40824849  0.111226671 -0.044520928  0.304965764
```

```
## Passive.sport          -0.12286934  0.173114932 -0.008149967 -0.163504290
## Active.sport            0.12288808  0.094258117 -0.113748787 -0.229837754
## Gardening              -0.07119334  0.018650302 -0.264460422  0.129070274
## Celebrities             0.12154043  0.201086302 -0.167280529 -0.104969952
## Shopping                0.17459243 -0.297243944 -0.017347593 -0.018994930
## Science.and.technology  0.01896182 -0.119651077 -0.052951372 -0.015145916
## Theatre                 0.01543414 -0.141965816 -0.039585692  0.049962793
## Fun.with.friends        0.06722038 -0.371194201  0.259517176 -0.283662704
## Adrenaline.sports      -0.18716741 -0.139978216 -0.149615685  0.214809377
## Pets                   -0.25419378 -0.128131051 -0.078362905  0.223109861
##                              CV 13        CV 14        CV 15        CV 16
## History                -0.144423997  0.019520035 -0.182522658  0.030390112
## Psychology              0.378513921 -0.144673639  0.129185425  0.264574210
## Politics               -0.101656574  0.068865136 -0.015242481  0.188841728
## Mathematics            -0.236570894  0.025081905 -0.337695897 -0.220730796
## Physics                 0.252517013 -0.046127432  0.045743694 -0.198611728
## Internet                0.298921408  0.316824896  0.119774371  0.200856808
## PC                     -0.002798923 -0.050423245 -0.134827064 -0.025655019
## Economy.Management     -0.229727787 -0.085711593  0.309129006  0.184323672
## Biology                -0.400125181  0.504879174 -0.046921203  0.282339382
## Chemistry               0.389343923 -0.132915631  0.146970064 -0.060930227
## Reading                -0.206393493 -0.262269537  0.268436747 -0.148647153
## Geography               0.022429751 -0.248000528 -0.023384845  0.001234150
## Foreign.languages       0.312525437  0.291930074 -0.009711371 -0.304864405
## Medicine                0.079980247  0.034011401 -0.137723538 -0.046886262
## Law                     0.027566606  0.271879058 -0.115273130 -0.028154419
## Cars                   -0.079332065  0.150943794  0.196392075  0.236328761
## Art.exhibitions         0.107757933  0.210727488  0.090954181  0.167124180
## Religion                0.039661217 -0.271421808  0.372298264  0.011932934
## Countryside..outdoors   0.039771475  0.073372783 -0.170690245  0.218681180
## Dancing                -0.291494386  0.011477217 -0.127059901  0.011741609
## Musical.instruments     0.011472351 -0.001351256  0.022434043 -0.126737167
## Writing                -0.244595004  0.081411345 -0.095644039 -0.166966537
## Passive.sport          -0.017046791 -0.222183524 -0.018813827  0.158472266
## Active.sport            0.067206947  0.184160885  0.229272798 -0.257927464
## Gardening               0.292884862 -0.153776513 -0.079865682 -0.019307150
## Celebrities             0.210942280 -0.151954449 -0.435291430  0.028935815
## Shopping               -0.025484497 -0.078713319  0.260642779 -0.188916988
## Science.and.technology -0.188115166 -0.189916848 -0.173644615 -0.002729397
## Theatre                 0.089816031  0.053262769 -0.108383971  0.131028056
## Fun.with.friends       -0.182268722 -0.504283602 -0.334493931  0.080311003
## Adrenaline.sports       0.151712717 -0.155925306  0.057370619 -0.080431857
## Pets                   -0.171146798  0.100358524  0.081467945 -0.069016641
##                              CV 17        CV 18        CV 19
## History                -0.142691002 -0.091064716  0.134810366
## Psychology              0.141979701  0.120665030  0.167662181
## Politics                0.181507697  0.291014173 -0.065719082
## Mathematics             0.073590762 -0.037159136  0.161198487
## Physics                -0.067155098  0.480468669 -0.063971861
## Internet                0.407494068 -0.015789079 -0.010746939
```

```
## PC                       0.075454959 -0.388321268 -0.225859330
## Economy.Management       -0.244476636 -0.104072306  0.019902327
## Biology                   0.227673648  0.066207808 -0.409451633
## Chemistry                -0.074675813 -0.478360529  0.326997552
## Reading                   0.150667594 -0.155105748  0.057428358
## Geography                 0.073686531 -0.079477418  0.176281385
## Foreign.languages        -0.326384469 -0.002792009 -0.257327803
## Medicine                 -0.321505668  0.045805182 -0.099733075
## Law                      -0.249276207 -0.142731630  0.152433476
## Cars                      0.003898125 -0.084417014  0.147170793
## Art.exhibitions           0.145864976 -0.092704172  0.148758937
## Religion                 -0.166005781 -0.016685487 -0.229725718
## Countryside..outdoors    -0.050455779 -0.202627692  0.041374648
## Dancing                   0.188265701 -0.020162607 -0.127031752
## Musical.instruments      -0.171043418  0.098876847  0.222660815
## Writing                  -0.017094077 -0.155711519 -0.282358801
## Passive.sport            -0.201257330  0.183912520 -0.113826529
## Active.sport              0.142982850  0.291134472 -0.007107319
## Gardening                 0.277465289  0.042929432  0.079307656
## Celebrities              -0.227382978  0.082553906 -0.018870359
## Shopping                  0.022557734 -0.041090369  0.295709678
## Science.and.technology   -0.007079007  0.009079231  0.171598661
## Theatre                   0.081397679  0.205540455 -0.104832616
## Fun.with.friends         -0.032606265  0.020306772  0.043063056
## Adrenaline.sports         0.058730503 -0.193125550 -0.160518522
## Pets                      0.011350478  0.029556418  0.221061473
##
##   Y Vars:
##                                CV 1         CV 2         CV 3         CV 4
## Music                    -0.01562241  0.372425886 -0.344081715  0.01568416
## Slow.songs.or.fast.songs -0.01322202 -0.099905194 -0.071178405  0.17877130
## Dance                    -0.06624628  0.067098357 -0.208037934  0.16322702
## Folk                      0.05324425  0.022222366  0.278972940  0.38366199
## Country                   0.03057841 -0.191900966 -0.125527685  0.10999038
## Classical.music           0.29708481 -0.003674531 -0.006717753  0.17545824
## Musical                   0.01336652  0.392837390 -0.029109366 -0.29287700
## Pop                      -0.16910909  0.169839868  0.065671384 -0.29798855
## Rock                      0.02995350  0.028362048 -0.184648973 -0.22255159
## Metal.or.Hardrock         0.02201227 -0.246787319 -0.099851071  0.15603792
## Punk                      0.02668992  0.036152924 -0.037669600 -0.16171345
## Hiphop..Rap              -0.13743338 -0.065905287 -0.433688035  0.05051427
## Reggae..Ska               0.04113529 -0.117038882 -0.123796470  0.02169885
## Swing..Jazz               0.18372228  0.072943201 -0.088389953 -0.16133946
## Rock.n.roll              -0.05969345 -0.029382929 -0.132550591  0.15064732
## Alternative               0.18844613  0.113171847 -0.106258632 -0.20948518
## Latino                   -0.09332992  0.311545283  0.094841877  0.36040750
## Techno..Trance           -0.03643442 -0.049276316 -0.125517413  0.17090048
## Opera                     0.22067889 -0.030396811 -0.071394461  0.09377776
##                                CV 5         CV 6         CV 7        CV 8
## Music                    -0.67700064 -0.874757826 -0.23729029  0.18732840
```

```
## Slow.songs.or.fast.songs   0.16019279   0.034117703   0.16574901  -0.14519968
## Dance                       0.20389551   0.003039075   0.17088836   0.01702432
## Folk                       -0.05887257   0.193477631  -0.18018732   0.45348463
## Country                    -0.07261984   0.266266887  -0.29176199  -0.21811208
## Classical.music            -0.42386100  -0.016965663   0.12850764  -0.49052548
## Musical                     0.28825290   0.195280845  -0.47900667   0.03811848
## Pop                        -0.13425285   0.387414387   0.09965157  -0.22439775
## Rock                       -0.15792920  -0.276760685  -0.35499867  -0.34688966
## Metal.or.Hardrock           0.27878711  -0.042359170  -0.22911309  -0.18654882
## Punk                       -0.23704192   0.460444038   0.21011249   0.07150273
## Hiphop..Rap                 0.24691638  -0.094919617   0.12877201  -0.15001777
## Reggae..Ska                 0.09774626  -0.017041846  -0.23634485   0.20407210
## Swing..Jazz                 0.02804935   0.171730690   0.28126344   0.16863960
## Rock.n.roll                 0.13074306  -0.236842519  -0.07497829   0.40664117
## Alternative                -0.02525753   0.084183383   0.24036453   0.15134046
## Latino                     -0.10211457  -0.201342126   0.03885165  -0.13550373
## Techno..Trance             -0.38965015   0.286358754  -0.12893898   0.04992486
## Opera                       0.50537075  -0.104899917   0.34189493  -0.16954349
##                                   CV 9         CV 10         CV 11         CV 12
## Music                       0.391445554  -0.54505256  -0.29800175   0.01167879
## Slow.songs.or.fast.songs   -0.550104560  -0.06650353  -0.33402064   0.14411411
## Dance                       0.059873604  -0.61248561   0.42549261  -0.21388340
## Folk                        0.200760634  -0.02564557  -0.41574132  -0.46490410
## Country                     0.243913279   0.03420490   0.32884688   0.50244186
## Classical.music            -0.184352077   0.04447745  -0.26033922   0.23115255
## Musical                     0.134422471  -0.11353688  -0.06947697   0.24035327
## Pop                        -0.097699422   0.22029966  -0.18474343  -0.30251436
## Rock                       -0.110456417  -0.03308943   0.27405321  -0.40310762
## Metal.or.Hardrock           0.143069718   0.19923873   0.06628918  -0.25082854
## Punk                       -0.071121385  -0.08021954  -0.30661894   0.03469219
## Hiphop..Rap                 0.368580469   0.30760209  -0.31260791   0.10288016
## Reggae..Ska                -0.569791307  -0.10790567   0.11137957  -0.04639596
## Swing..Jazz                 0.376120859   0.29052100   0.15388004  -0.33104021
## Rock.n.roll                -0.145053883   0.04911438  -0.41796632   0.24171155
## Alternative                 0.009328366   0.09137899   0.35862682   0.20174471
## Latino                     -0.299975466   0.41294012   0.18974673   0.05265729
## Techno..Trance             -0.045113021  -0.03140989   0.06406925   0.09426715
## Opera                      -0.107112298  -0.36406161   0.01403711  -0.16135114
##                                  CV 13         CV 14         CV 15         CV 16
## Music                      -0.13343900  -0.029590614  -0.17772733   0.087346501
## Slow.songs.or.fast.songs   -0.45807462  -0.345542842  -0.12262750  -0.071503732
## Dance                      -0.03938692  -0.309322785   0.04208612  -0.458071392
## Folk                        0.10434141  -0.213304001   0.20670280   0.173782729
## Country                    -0.56269923  -0.136784295  -0.10110341   0.020229738
## Classical.music             0.03286651  -0.341276593   0.03733368  -0.049009186
## Musical                     0.23609441   0.005238919   0.12502415   0.007894731
## Pop                        -0.01124778  -0.214985547  -0.55297789   0.148037836
## Rock                       -0.22349219   0.076334772   0.35525843   0.291722309
## Metal.or.Hardrock           0.39440018  -0.240675576  -0.29063712  -0.207507864
## Punk                       -0.20709730   0.339717856   0.42555152  -0.502012894
```

```
## Hiphop..Rap                0.04094441 -0.057471903  0.30601162  0.124608990
## Reggae..Ska               -0.01721645 -0.129872088 -0.04494246  0.539850651
## Swing..Jazz               -0.40665602  0.239853606 -0.16655739 -0.026197690
## Rock.n.roll                0.17144379  0.187358081 -0.51785652 -0.328602485
## Alternative                0.29095400 -0.450823636  0.08835619  0.055303583
## Latino                     0.00383568  0.161138699  0.27753171 -0.250498573
## Techno..Trance             0.36381389  0.425520840 -0.10425544  0.230903431
## Opera                     -0.03527260  0.434518504 -0.13231011  0.203487981
##                                CV 17        CV 18        CV 19
## Music                      0.17506952 -0.51031458  0.723242002
## Slow.songs.or.fast.songs   0.68600498 -0.43448352 -0.433131363
## Dance                     -0.04389146  0.40507480  0.005826427
## Folk                      -0.07823880 -0.09341288 -0.205952232
## Country                   -0.19327286 -0.26617083  0.058551733
## Classical.music            0.06326703  0.63149908  0.154613573
## Musical                    0.38153789  0.05158448 -0.051816360
## Pop                       -0.24852233 -0.27924755  0.202342062
## Rock                      -0.10311764  0.13572059 -0.714353806
## Metal.or.Hardrock          0.16025539 -0.14704395  0.403859560
## Punk                      -0.06564219 -0.10083362  0.216258534
## Hiphop..Rap               -0.12592892 -0.04543199 -0.146492891
## Reggae..Ska               -0.04660661  0.22333816  0.392507174
## Swing..Jazz                0.51849094  0.01417334  0.023827155
## Rock.n.roll               -0.33712513  0.28265508 -0.193272772
## Alternative               -0.16532945 -0.37534770 -0.113193866
## Latino                    -0.10605162 -0.17454528  0.085429049
## Techno..Trance             0.17923905 -0.05282701 -0.180571843
## Opera                     -0.35061396 -0.47006685 -0.080607485
##
##
## Structural Correlations (Loadings):
##
##  X Vars:
##                                 CV 1         CV 2         CV 3         CV 4
## History                    0.46221429 -0.063107269 -0.17194651  0.275494106
## Psychology                 0.25979316  0.231455890 -0.22691953  0.060025536
## Politics                   0.20744422 -0.106696269 -0.17340829  0.081954949
## Mathematics                0.10592829 -0.124423162 -0.06570979  0.259766639
## Physics                    0.25990474 -0.206322138 -0.18328246  0.393493450
## Internet                  -0.16869551  0.001526672 -0.25811111 -0.154243691
## PC                         0.02187078 -0.388373937 -0.43025312  0.057494908
## Economy.Management        -0.13229445  0.067266721 -0.15798547  0.063399668
## Biology                    0.13118878  0.286312854 -0.07906593  0.268426263
## Chemistry                  0.07097934  0.126518907  0.01306321  0.340561688
## Reading                    0.49882401  0.432369799 -0.05473182 -0.193203763
## Geography                  0.20030543  0.018998485 -0.15789939  0.163045627
## Foreign.languages          0.26757344  0.396995951 -0.27605043 -0.061882185
## Medicine                   0.14914547  0.280622485 -0.07691012  0.181651898
## Law                        0.04932124  0.103905278 -0.21692749  0.072385918
## Cars                      -0.20389353 -0.231412922 -0.44412833  0.226359679
```

```
## Art.exhibitions          0.59570392  0.351710010 -0.17191714 -0.101198476
## Religion                 0.33755228  0.211690585  0.08457958  0.363715924
## Countryside..outdoors    0.23038461  0.184068935  0.06581718  0.381930934
## Dancing                 -0.11930085  0.680974277 -0.12186097  0.461498666
## Musical.instruments      0.49261678  0.195312089 -0.13408854  0.265301644
## Writing                  0.33707600  0.189243179 -0.06617228 -0.094381422
## Passive.sport           -0.11724919 -0.053575798 -0.24197769  0.004751257
## Active.sport            -0.15457963 -0.069158262 -0.47505368  0.302717230
## Gardening                0.08370508  0.237569526  0.17967070  0.309680515
## Celebrities             -0.38491574  0.466378797 -0.15519062 -0.210591047
## Shopping                -0.34901957  0.600361216 -0.05574638 -0.140344125
## Science.and.technology   0.29319546 -0.155254146 -0.33043445  0.068106310
## Theatre                  0.49997655  0.597986496 -0.03420260 -0.116321800
## Fun.with.friends        -0.04567797  0.249432885 -0.55628671  0.041249497
## Adrenaline.sports       -0.12035347 -0.103761409 -0.53263741  0.188999422
## Pets                    -0.11924072  0.110927052 -0.15769945 -0.099418138
##                                CV 5         CV 6        CV 7          CV 8
## History                 -0.04061126 -0.156507940  0.199153368 -0.1886501521
## Psychology              -0.14537953  0.049422569 -0.116377403 -0.0849559535
## Politics                 0.14992155  0.007820058  0.236918072 -0.2589121070
## Mathematics              0.04530222  0.576056064 -0.144297392 -0.1185591127
## Physics                  0.02621898  0.379520622 -0.211279142 -0.3579281049
## Internet                -0.36199088  0.157030085 -0.222993109 -0.1865201774
## PC                       0.12156062  0.228890401 -0.058633690 -0.2743070866
## Economy.Management       0.12284381  0.344454181  0.038515583 -0.0696613758
## Biology                 -0.06566585  0.148603175 -0.110365339 -0.1888668583
## Chemistry                0.04833921  0.122210584 -0.244524433 -0.2317152664
## Reading                  0.14395346 -0.146661918 -0.130607645 -0.1339606301
## Geography               -0.04451892  0.033607258  0.161951062 -0.0063564588
## Foreign.languages       -0.17253070 -0.048757650  0.172682940  0.0184358556
## Medicine                 0.12557094 -0.032959613 -0.207045637 -0.1197920785
## Law                      0.27012620 -0.030932008  0.190321103 -0.2056719381
## Cars                     0.14653353  0.117384634  0.009276592 -0.1485905073
## Art.exhibitions          0.13403268  0.196179300  0.309530959  0.3257115462
## Religion                -0.05515569  0.276586669  0.040832359 -0.0270786103
## Countryside..outdoors    0.03881158  0.070496643 -0.269937227  0.4473769040
## Dancing                  0.06386569 -0.069512718  0.054470850  0.1918631507
## Musical.instruments     -0.07686134 -0.118052821 -0.124650818  0.2006436544
## Writing                 -0.10062764  0.062942063 -0.035324049 -0.0003764241
## Passive.sport            0.03812272  0.104060428 -0.096444662  0.1160636534
## Active.sport             0.22161942  0.114073916 -0.007041751  0.2148353774
## Gardening                0.18675424  0.009032837  0.177289329 -0.0598409579
## Celebrities              0.08339776  0.233890985  0.134497050  0.0072161969
## Shopping                -0.08460649  0.079191440  0.249088908 -0.0804816619
## Science.and.technology  -0.10418701  0.414268008 -0.113558735 -0.2385133866
## Theatre                  0.39011350 -0.027282521 -0.123352575 -0.0022966275
## Fun.with.friends        -0.13278865 -0.300653584  0.061504034  0.1310101877
## Adrenaline.sports        0.26479862  0.102870092  0.086489729  0.2701869764
## Pets                     0.05499834  0.004379814 -0.243660366  0.1516284418
##                                CV 9        CV 10       CV 11         CV 12
```

```
## History              -0.0131763655  0.086021180 -0.24158816  0.152205270
## Psychology           -0.0480274113  0.361008880  0.05961007  0.354560319
## Politics             -0.0013371721  0.150153843 -0.16647999  0.207793402
## Mathematics          -0.1618111523  0.071956469  0.05469191  0.034015495
## Physics              -0.0401551913 -0.215800419  0.29594435  0.114016450
## Internet             -0.0191387692 -0.062040596 -0.24884662  0.147919086
## PC                    0.1559034504 -0.016253014 -0.07366394  0.066613835
## Economy.Management    0.0136807453  0.150898794  0.16852599  0.239310282
## Biology              -0.3208744565 -0.140924687 -0.08256901 -0.340053197
## Chemistry            -0.1688365120 -0.069773336  0.11696409 -0.361315889
## Reading              -0.1250581006  0.214728115 -0.03994653 -0.099748586
## Geography            -0.3958125993  0.149685164 -0.08934984  0.160087977
## Foreign.languages    -0.2174857617  0.132935364  0.05669221  0.156265658
## Medicine             -0.1929256108 -0.234602204 -0.13239419 -0.078554118
## Law                  -0.0998020832  0.157350433 -0.06594821  0.232377619
## Cars                  0.2600372297 -0.099753702 -0.11374510  0.049303012
## Art.exhibitions       0.0788909877 -0.021244787  0.11462286 -0.002862426
## Religion             -0.0300860911 -0.148598673 -0.30511722  0.054180973
## Countryside..outdoors 0.0829979523 -0.131963452 -0.04251554  0.023742516
## Dancing               0.0009942101  0.136911407  0.14576967  0.124006933
## Musical.instruments   0.2035325595  0.155127448 -0.27580009 -0.049588175
## Writing               0.3643320969  0.248636049 -0.11964569  0.397232168
## Passive.sport        -0.1526781569  0.144918395 -0.14072849 -0.199895471
## Active.sport          0.1134947305  0.075144029 -0.17626906 -0.159973093
## Gardening            -0.0041099464  0.007916056 -0.32051436  0.057377434
## Celebrities           0.1522060901  0.136277612 -0.23163075 -0.061912279
## Shopping              0.1565335015 -0.242431506 -0.05848104 -0.035165280
## Science.and.technology 0.0428306935 -0.255789873 -0.05817262  0.074028822
## Theatre               0.0305744092 -0.120471555  0.07853727  0.031236118
## Fun.with.friends     -0.0107197952 -0.325418931  0.12875660 -0.175828567
## Adrenaline.sports    -0.1441950031 -0.186232437 -0.14071043  0.243679384
## Pets                 -0.3471977232 -0.194015608 -0.20582715  0.230150954
##                            CV 13        CV 14        CV 15          CV
16
## History              -0.157066809  0.0081942640 -0.040416470
0.135055732
## Psychology            0.259592484  0.0184651260  0.181419740
0.256636656
## Politics             -0.164268850  0.0084601150  0.001313895
0.297199691
## Mathematics          -0.116772207 -0.0094869914 -0.295623510 -
0.231500093
## Physics               0.118950614  0.0319994713 -0.215818954 -
0.179636253
## Internet              0.192196958  0.0711709496 -0.093074057
0.217174678
## PC                    0.052925901  0.0011532562 -0.230144017
0.039220103
## Economy.Management   -0.285531882 -0.0611904164  0.205558696
0.235535974
```

```
## Biology                 0.011500156  0.3920760402 -0.070976146
0.093745127
## Chemistry               0.241106843  0.1818281415 -0.053098478 -
0.094189469
## Reading                -0.153648826 -0.1427973785  0.216749381 -
0.192599600
## Geography              -0.019557929 -0.1673669407 -0.060009200
0.082063334
## Foreign.languages       0.165989137  0.1762173356  0.106575643 -
0.204635968
## Medicine                0.178999116  0.3085841336 -0.064144152
0.028454827
## Law                    -0.084379938  0.2745034684  0.015075801
0.126454751
## Cars                   -0.023131555  0.1075849493  0.059803019
0.278079868
## Art.exhibitions         0.083576321  0.1585009698  0.083181979
0.112142783
## Religion                0.016245768 -0.1941570903  0.355999616
0.070028713
## Countryside..outdoors   0.066709908  0.0089999125 -0.098514748
0.200670203
## Dancing                -0.185543681  0.0693623794 -0.009994715 -
0.030496121
## Musical.instruments     0.018413457  0.0576456318 -0.032263751 -
0.183376440
## Writing                -0.171973432  0.0032586595 -0.017454830 -
0.208424081
## Passive.sport           0.023528058 -0.2217700814 -0.049008243
0.298072724
## Active.sport            0.030897654  0.1747276176  0.216185490 -
0.263814838
## Gardening               0.183979862 -0.0668522211 -0.087850692 -
0.006637972
## Celebrities             0.157248527 -0.0792016600 -0.309715366
0.038795758
## Shopping                0.046969460 -0.0001728935  0.160434388 -
0.077107694
## Science.and.technology -0.072890485 -0.0424978744 -0.211328012
0.035743862
## Theatre                -0.009823273  0.0128478019 -0.008908434
0.107584722
## Fun.with.friends       -0.105755642 -0.2904290376 -0.146994688
0.072985170
## Adrenaline.sports       0.137165113 -0.1479043628  0.055559104 -
0.062728825
## Pets                   -0.197860822  0.2034926679  0.064093666 -
0.049623182
##                               CV 17        CV 18        CV 19
## History                 -0.04499564 -0.059952982  0.206876521
```

```
## Psychology               0.11064720  0.114770112  0.044159826
## Politics                -0.08425720  0.233319424  0.057331996
## Mathematics              0.02096335  0.030930010  0.100107067
## Physics                  0.04805683  0.230650562  0.015544236
## Internet                 0.19845106 -0.136432965  0.002487084
## PC                       0.10576216 -0.274097837 -0.150906542
## Economy.Management      -0.32524111 -0.049814119  0.064502649
## Biology                  0.07619144 -0.104982976 -0.195134848
## Chemistry               -0.01911758 -0.322308305  0.098206117
## Reading                  0.16810563 -0.202701172  0.008041295
## Geography                0.02458790 -0.090794516  0.088009846
## Foreign.languages       -0.30618744 -0.151672735 -0.160940126
## Medicine                -0.20029746 -0.070538216 -0.162543120
## Law                     -0.34057886  0.016901753  0.244437478
## Cars                    -0.08369465  0.002840809  0.231245139
## Art.exhibitions          0.21331743 -0.070194197  0.093034438
## Religion                -0.11497621 -0.029198519 -0.302807916
## Countryside..outdoors    0.09714539 -0.215783281  0.018509415
## Dancing                  0.21023526  0.011431600 -0.079977038
## Musical.instruments     -0.12632366  0.090308685  0.092506996
## Writing                  0.11624590 -0.125527149 -0.228580273
## Passive.sport           -0.21470643  0.249806635 -0.062781187
## Active.sport             0.18614206  0.296227352  0.021476116
## Gardening                0.35754669 -0.027174138  0.073531272
## Celebrities             -0.17452180  0.042383305  0.150562823
## Shopping                -0.04045861 -0.020518291  0.318072441
## Science.and.technology   0.05558880 -0.058117862  0.093714098
## Theatre                  0.14130059  0.110847276 -0.009426730
## Fun.with.friends         0.02494828  0.061154263  0.056614665
## Adrenaline.sports        0.07098269 -0.082560307 -0.112210813
## Pets                     0.07648737  0.019381000  0.397848022
##
##   Y Vars:
##                                 CV 1         CV 2         CV 3         CV 4
## Music                      0.05748834  0.303979261 -0.35864818  0.001950701
## Slow.songs.or.fast.songs  -0.18510350 -0.129649979 -0.18073074  0.148772533
## Dance                     -0.38749621  0.338269106 -0.40095029  0.339944156
## Folk                       0.38178244  0.207604456  0.14822552  0.521289687
## Country                    0.25568618 -0.036896537 -0.13133073  0.326751789
## Classical.music            0.76319684  0.229693188 -0.06662269  0.207143205
## Musical                    0.25721542  0.704030677 -0.05768890 -0.080221949
## Pop                       -0.43751181  0.493742511 -0.12431774 -0.108470878
## Rock                       0.35701104 -0.064731499 -0.34922475 -0.277797505
## Metal.or.Hardrock          0.37875199 -0.440777173 -0.22889063  0.012576428
## Punk                       0.29228065 -0.223802997 -0.33984607 -0.282910319
## Hiphop..Rap               -0.45282608  0.061338495 -0.62582361  0.154940805
## Reggae..Ska                0.10692618 -0.006622676 -0.47955277  0.042435968
## Swing..Jazz                0.54369432  0.276867603 -0.31550407  0.057417719
## Rock.n.roll                0.36417364  0.105937082 -0.38793780  0.006268669
## Alternative                0.59611787  0.070027925 -0.28683878 -0.213455594
```

```
## Latino                    -0.07093147  0.662169811 -0.05584680  0.502296145
## Techno..Trance            -0.20765156 -0.016055633 -0.40216809  0.368966283
## Opera                      0.65959492  0.226992518 -0.03946392  0.212782019
##                               CV 5         CV 6         CV 7          CV
## 8
## Music                      -0.42268826 -0.4765157418 -0.11416020
## 0.090101691
## Slow.songs.or.fast.songs   0.04821400  0.0001600807  0.09618424 -
## 0.036855271
## Dance                       0.06744671  0.2334516841  0.16121438
## 0.001251964
## Folk                       -0.02019356  0.2557708703 -0.23018172
## 0.272473400
## Country                    -0.01150808  0.3048100099 -0.43424725 -
## 0.061562927
## Classical.music            -0.14793314  0.0663689560  0.06622729 -
## 0.358016698
## Musical                     0.35288441  0.2210879237 -0.39924934 -
## 0.105910736
## Pop                        -0.09112693  0.3460169792  0.06130990 -
## 0.251936599
## Rock                       -0.18455226 -0.1472818095 -0.43847413 -
## 0.143283955
## Metal.or.Hardrock           0.08471454 -0.0258570435 -0.37910738 -
## 0.164504170
## Punk                       -0.14730427  0.2841737136 -0.13502328
## 0.098125419
## Hiphop..Rap                 0.18422616  0.0592922393  0.23300772 -
## 0.073739739
## Reggae..Ska                 0.14672796  0.1312463089 -0.14518246
## 0.339991500
## Swing..Jazz                 0.03837069  0.0847011888  0.13145766
## 0.244349233
## Rock.n.roll                 0.02335338 -0.0951836107 -0.22922439
## 0.345387976
## Alternative                -0.14642889  0.0192002369  0.14593729
## 0.305890197
## Latino                      0.04475240 -0.0451165888 -0.04597542 -
## 0.059790041
## Techno..Trance             -0.36664238  0.3575779159  0.05172024 -
## 0.036479033
## Opera                       0.33248994  0.0367093979  0.11320881 -
## 0.269779635
##                               CV 9        CV 10        CV 11        CV 12
## Music                       0.16631544 -0.30624430 -0.17796224 -0.05354091
## Slow.songs.or.fast.songs   -0.43837074 -0.11161382 -0.24110176  0.06300787
## Dance                       0.03970994 -0.38766855  0.26050226 -0.18915749
## Folk                        0.17420976 -0.02238791 -0.24576038 -0.31367004
## Country                     0.21861140  0.02604889  0.18008269  0.30206150
## Classical.music             0.00341660  0.02100975 -0.21427648  0.07483189
```

```
## Musical                      0.04401927 -0.08430424 -0.11831450  0.16793992
## Pop                         -0.07057881  0.05724890 -0.12936777 -0.26030846
## Rock                        -0.17727585  0.08295762  0.04861687 -0.40526937
## Metal.or.Hardrock           -0.04589891  0.16982484  0.01408611 -0.31004049
## Punk                        -0.24541585 -0.03525230 -0.22311609 -0.15415174
## Hiphop..Rap                  0.21239346  0.18550180 -0.23376028  0.05946248
## Reggae..Ska                 -0.47293845  0.09731090  0.05755601 -0.09581913
## Swing..Jazz                  0.14615589  0.34244365  0.14084046 -0.22723886
## Rock.n.roll                 -0.16277942  0.19345412 -0.17522423  0.05787770
## Alternative                 -0.10103139  0.13870504  0.20478478  0.10047356
## Latino                      -0.23011628  0.37047530  0.20609932 -0.04075931
## Techno..Trance              -0.01359747 -0.12811099  0.15293494  0.04378362
## Opera                       -0.01394539 -0.25492188 -0.09168991 -0.05692234
##                                  CV 13       CV 14       CV 15        CV 16
## Music                       -0.09316168 -0.05058200 -0.07433394  0.018612396
## Slow.songs.or.fast.songs    -0.19169656 -0.28086523 -0.07753006 -0.117395568
## Dance                       -0.03474029 -0.19095669 -0.06042944 -0.163749763
## Folk                        -0.07270517 -0.23785968  0.11787246  0.101807417
## Country                     -0.48096545 -0.06878342 -0.15044489 -0.024334569
## Classical.music              0.03823991 -0.12087123 -0.06706439  0.040966366
## Musical                      0.08622659  0.03350521  0.01195706  0.004809101
## Pop                         -0.06340186 -0.16143712 -0.38788004  0.108813350
## Rock                        -0.09450541  0.02351221  0.07747249 -0.170846782
## Metal.or.Hardrock            0.27377096 -0.04977315 -0.04779826 -0.379385895
## Punk                        -0.05576290  0.15025199  0.33671844 -0.440793687
## Hiphop..Rap                  0.02278469 -0.07494781  0.23892449  0.261110211
## Reggae..Ska                 -0.16084300 -0.04356407  0.12498560  0.353522839
## Swing..Jazz                 -0.29536665  0.14424325 -0.20373926  0.023416464
## Rock.n.roll                 -0.04837120  0.07345180 -0.39315593 -0.342148617
## Alternative                  0.25763322 -0.33196828  0.05601182 -0.086775394
## Latino                      -0.06938222  0.10269989  0.09633157 -0.116162560
## Techno..Trance               0.37359819  0.29437697 -0.14733690  0.180888223
## Opera                        0.01638741  0.29020322 -0.09900415  0.139600139
##                                  CV 17       CV 18        CV 19
## Music                        0.08254471 -0.30807310  0.271955964
## Slow.songs.or.fast.songs     0.52079406 -0.33931142 -0.304443116
## Dance                       -0.02243065  0.22081522 -0.033938570
## Folk                        -0.16150514 -0.08055649 -0.126666523
## Country                     -0.27660226 -0.12578070  0.009576745
## Classical.music             -0.02891792  0.28710853  0.033027242
## Musical                      0.14628670  0.05479743 -0.004443248
## Pop                         -0.23346137 -0.04186852  0.030538072
## Rock                        -0.16293488 -0.03180421 -0.351472190
## Metal.or.Hardrock            0.09285882 -0.20603852  0.170565464
## Punk                        -0.12830949 -0.15538717  0.172192515
## Hiphop..Rap                 -0.04999748  0.07930519  0.021187464
## Reggae..Ska                 -0.04796895  0.16062401  0.373123349
## Swing..Jazz                  0.23333518  0.15442307  0.027691562
## Rock.n.roll                 -0.27512373  0.12150337 -0.237433268
## Alternative                 -0.13134519 -0.25813174 -0.150387450
```

```
## Latino                  -0.07112727 -0.07517277  0.090356552
## Techno..Trance           0.19916571 -0.04920495 -0.166732734
## Opera                   -0.20745393 -0.18814887  0.006362220
##
##
## Fractional Variance Deposition on Canonical Variates:
##
##  X Vars:
##                               CV 1         CV 2         CV 3         CV 4
## History                0.2136420494 3.982527e-03 0.0295656017 7.589700e-02
## Psychology             0.0674924839 5.357183e-02 0.0514924726 3.603065e-03
## Politics               0.0430331041 1.138409e-02 0.0300704335 6.716614e-03
## Mathematics            0.0112208025 1.548112e-02 0.0043177768 6.747871e-02
## Physics                0.0675504755 4.256882e-02 0.0335924611 1.548371e-01
## Internet               0.0284581763 2.330728e-06 0.0666213426 2.379112e-02
## PC                     0.0004783308 1.508343e-01 0.1851177506 3.305664e-03
## Economy.Management     0.0175018212 4.524812e-03 0.0249594099 4.019518e-03
## Biology                0.0172104948 8.197505e-02 0.0062514221 7.205266e-02
## Chemistry              0.0050380663 1.600703e-02 0.0001706475 1.159823e-01
## Reading                0.2488253944 1.869436e-01 0.0029955727 3.732769e-02
## Geography              0.0401222638 3.609424e-04 0.0249322167 2.658388e-02
## Foreign.languages      0.0715955462 1.576058e-01 0.0762038419 3.829405e-03
## Medicine               0.0222443707 7.874898e-02 0.0059151661 3.299741e-02
## Law                    0.0024325851 1.079631e-02 0.0470575339 5.239721e-03
## Cars                   0.0415725698 5.355194e-02 0.1972499755 5.123870e-02
## Art.exhibitions        0.3548631599 1.236999e-01 0.0295555045 1.024113e-02
## Religion               0.1139415401 4.481290e-02 0.0071537048 1.322893e-01
## Countryside..outdoors  0.0530770697 3.388137e-02 0.0043319017 1.458712e-01
## Dancing                0.0142326931 4.637260e-01 0.0148500967 2.129810e-01
## Musical.instruments    0.2426712962 3.814681e-02 0.0179797375 7.038496e-02
## Writing                0.1136202292 3.581298e-02 0.0043787703 8.907853e-03
## Passive.sport          0.0137473723 2.870366e-03 0.0585532027 2.257444e-05
## Active.sport           0.0238948627 4.782865e-03 0.2256759992 9.163772e-02
## Gardening              0.0070065406 5.643928e-02 0.0322815618 9.590202e-02
## Celebrities            0.1481601272 2.175092e-01 0.0240841275 4.434859e-02
## Shopping               0.1218146584 3.604336e-01 0.0031076591 1.969647e-02
## Science.and.technology 0.0859635803 2.410385e-02 0.1091869227 4.638469e-03
## Theatre                0.2499765527 3.575878e-01 0.0011698176 1.353076e-02
## Fun.with.friends       0.0020864774 6.221676e-02 0.3094549091 1.701521e-03
## Adrenaline.sports      0.0144849581 1.076643e-02 0.2837026092 3.572078e-02
## Pets                   0.0142183494 1.230481e-02 0.0248691154 9.883966e-03
##                               CV 5         CV 6         CV 7         CV 8
## History                0.0016492746 2.449474e-02 3.966206e-02 3.558888e-02
## Psychology             0.0211352089 2.442590e-03 1.354370e-02 7.217514e-03
## Politics               0.0224764714 6.115330e-05 5.613017e-02 6.703548e-02
## Mathematics            0.0020522914 3.318406e-01 2.082174e-02 1.405626e-02
## Physics                0.0006874347 1.440359e-01 4.463888e-02 1.281125e-01
## Internet               0.1310373940 2.465845e-02 4.972593e-02 3.478978e-02
## PC                     0.0147769832 5.239082e-02 3.437910e-03 7.524438e-02
## Economy.Management     0.0150906013 1.186487e-01 1.483450e-03 4.852707e-03
```

```
## Biology              0.0043120043 2.208290e-02 1.218051e-02 3.567069e-02
## Chemistry            0.0023366794 1.493543e-02 5.979220e-02 5.369196e-02
## Reading              0.0207225984 2.150972e-02 1.705836e-02 1.794545e-02
## Geography            0.0019819339 1.129448e-03 2.622815e-02 4.040457e-05
## Foreign.languages    0.0297668411 2.377308e-03 2.981940e-02 3.398808e-04
## Medicine             0.0157680619 1.086336e-03 4.286790e-02 1.435014e-02
## Law                  0.0729681641 9.567891e-04 3.622212e-02 4.230095e-02
## Cars                 0.0214720760 1.377915e-02 8.605516e-05 2.207914e-02
## Art.exhibitions      0.0179647598 3.848632e-02 9.580941e-02 1.060880e-01
## Religion             0.0030421499 7.650019e-02 1.667282e-03 7.332511e-04
## Countryside..outdoors 0.0015063391 4.969777e-03 7.286611e-02 2.001461e-01
## Dancing              0.0040788262 4.832018e-03 2.967073e-03 3.681147e-02
## Musical.instruments  0.0059076657 1.393647e-02 1.553783e-02 4.025788e-02
## Writing              0.0101259218 3.961703e-03 1.247788e-03 1.416951e-07
## Passive.sport        0.0014533417 1.082857e-02 9.301573e-03 1.347077e-02
## Active.sport         0.0491151690 1.301286e-02 4.958626e-05 4.615424e-02
## Gardening            0.0348771468 8.159214e-05 3.143151e-02 3.580940e-03
## Celebrities          0.0069551869 5.470499e-02 1.808946e-02 5.207350e-05
## Shopping             0.0071582584 6.271284e-03 6.204528e-02 6.477298e-03
## Science.and.technology 0.0108549339 1.716180e-01 1.289559e-02 5.688864e-02
## Theatre              0.1521885413 7.443359e-04 1.521586e-02 5.274498e-06
## Fun.with.friends     0.0176328256 9.039258e-02 3.782746e-03 1.716367e-02
## Adrenaline.sports    0.0701183110 1.058226e-02 7.480473e-03 7.300100e-02
## Pets                 0.0030248178 1.918277e-05 5.937037e-02 2.299118e-02
##                             CV 9       CV 10       CV 11       CV 12
## History              1.736166e-04 7.399643e-03 0.058364841 2.316644e-02
## Psychology           2.306632e-03 1.303274e-01 0.003553361 1.257130e-01
## Politics             1.788029e-06 2.254618e-02 0.027715586 4.317810e-02
## Mathematics          2.618285e-02 5.177733e-03 0.002991205 1.157054e-03
## Physics              1.612439e-03 4.656982e-02 0.087583056 1.299975e-02
## Internet             3.662925e-04 3.849036e-03 0.061924640 2.188006e-02
## PC                   2.430589e-02 2.641605e-04 0.005426376 4.437403e-03
## Economy.Management   1.871628e-04 2.277045e-02 0.028401010 5.726941e-02
## Biology              1.029604e-01 1.985977e-02 0.006817641 1.156362e-01
## Chemistry            2.850577e-02 4.868318e-03 0.013680599 1.305492e-01
## Reading              1.563953e-02 4.610816e-02 0.001595726 9.949780e-03
## Geography            1.566676e-01 2.240565e-02 0.007983395 2.562816e-02
## Foreign.languages    4.730006e-02 1.767181e-02 0.003214007 2.441896e-02
## Medicine             3.722029e-02 5.503819e-02 0.017528221 6.170749e-03
## Law                  9.960456e-03 2.475916e-02 0.004349166 5.399936e-02
## Cars                 6.761936e-02 9.950801e-03 0.012937947 2.430787e-03
## Art.exhibitions      6.223788e-03 4.513410e-04 0.013138401 8.193484e-06
## Religion             9.051729e-04 2.208157e-02 0.093096516 2.935578e-03
## Countryside..outdoors 6.888660e-03 1.741435e-02 0.001807571 5.637070e-04
## Dancing              9.884537e-07 1.874473e-02 0.021248797 1.537772e-02
## Musical.instruments  4.142550e-02 2.406452e-02 0.076065689 2.458987e-03
## Writing              1.327379e-01 6.181988e-02 0.014315092 1.577934e-01
## Passive.sport        2.331062e-02 2.100134e-02 0.019804509 3.995820e-02
## Active.sport         1.288105e-02 5.646625e-03 0.031070781 2.559139e-02
## Gardening            1.689166e-05 6.266395e-05 0.102729453 3.292170e-03
```

```
## Celebrities             2.316669e-02 1.857159e-02 0.053652804 3.833130e-03
## Shopping                2.450274e-02 5.877304e-02 0.003420032 1.236597e-03
## Science.and.technology  1.834468e-03 6.542846e-02 0.003384054 5.480266e-03
## Theatre                 9.347945e-04 1.451340e-02 0.006168103 9.756951e-04
## Fun.with.friends        1.149140e-04 1.058975e-01 0.016578263 3.091568e-02
## Adrenaline.sports       2.079220e-02 3.468252e-02 0.019799425 5.937964e-02
## Pets                    1.205463e-01 3.764206e-02 0.042364817 5.296946e-02
##                                CV 13        CV 14        CV 15        CV 16
## History                 2.466998e-02 6.714596e-05 1.633491e-03 1.824005e-02
## Psychology              6.738826e-02 3.409609e-04 3.291312e-02 6.586237e-02
## Politics                2.698426e-02 7.157355e-05 1.726321e-06 8.832766e-02
## Mathematics             1.363575e-02 9.000301e-05 8.739326e-02 5.359229e-02
## Physics                 1.414925e-02 1.023966e-03 4.657782e-02 3.226918e-02
## Internet                3.693967e-02 5.065304e-03 8.662780e-03 4.716484e-02
## PC                      2.801151e-03 1.330000e-06 5.296627e-02 1.538217e-03
## Economy.Management      8.152846e-02 3.744267e-03 4.225438e-02 5.547720e-02
## Biology                 1.322536e-04 1.537236e-01 5.037613e-03 8.788149e-03
## Chemistry               5.813251e-02 3.306147e-02 2.819448e-03 8.871656e-03
## Reading                 2.360796e-02 2.039109e-02 4.698029e-02 3.709461e-02
## Geography               3.825126e-04 2.801169e-02 3.601104e-03 6.734391e-03
## Foreign.languages       2.755239e-02 3.105255e-02 1.135837e-02 4.187588e-02
## Medicine                3.204068e-02 9.522417e-02 4.114472e-03 8.096772e-04
## Law                     7.119974e-03 7.535215e-02 2.272798e-04 1.599080e-02
## Cars                    5.350688e-04 1.157452e-02 3.576401e-03 7.732841e-02
## Art.exhibitions         6.985001e-03 2.512256e-02 6.919242e-03 1.257600e-02
## Religion                2.639250e-04 3.769698e-02 1.267357e-01 4.904021e-03
## Countryside..outdoors   4.450212e-03 8.099842e-05 9.705156e-03 4.026853e-02
## Dancing                 3.442646e-02 4.811140e-03 9.989434e-05 9.300134e-04
## Musical.instruments     3.390554e-04 3.323019e-03 1.040950e-03 3.362692e-02
## Writing                 2.957486e-02 1.061886e-05 3.046711e-04 4.344060e-02
## Passive.sport           5.535695e-04 4.918197e-02 2.401808e-03 8.884735e-02
## Active.sport            9.546650e-04 3.052974e-02 4.673617e-02 6.959827e-02
## Gardening               3.384859e-02 4.469219e-03 7.717744e-03 4.406268e-05
## Celebrities             2.472710e-02 6.272903e-03 9.592361e-02 1.505111e-03
## Shopping                2.206130e-03 2.989217e-08 2.573919e-02 5.945596e-03
## Science.and.technology  5.313023e-03 1.806069e-03 4.465953e-02 1.277624e-03
## Theatre                 9.649669e-05 1.650660e-04 7.936020e-05 1.157447e-02
## Fun.with.friends        1.118426e-02 8.434903e-02 2.160744e-02 5.326835e-03
## Adrenaline.sports       1.881427e-02 2.187570e-02 3.086814e-03 3.934905e-03
## Pets                    3.914890e-02 4.140927e-02 4.107998e-03 2.462460e-03
##                                CV 17        CV 18        CV 19
## History                 0.0020246078 3.594360e-03 4.279789e-02
## Psychology              0.0122428034 1.317218e-02 1.950090e-03
## Politics                0.0070992762 5.443795e-02 3.286958e-03
## Mathematics             0.0004394619 9.566655e-04 1.002142e-02
## Physics                 0.0023094585 5.319968e-02 2.416233e-04
## Internet                0.0393828228 1.861395e-02 6.185588e-06
## PC                      0.0111856335 7.512962e-02 2.277278e-02
## Economy.Management      0.1057817770 2.481446e-03 4.160592e-03
## Biology                 0.0058051355 1.102143e-02 3.807761e-02
```

```
## Chemistry               0.0003654818 1.038826e-01 9.644441e-03
## Reading                 0.0282595037 4.108777e-02 6.466243e-05
## Geography                0.0006045651 8.243644e-03 7.745733e-03
## Foreign.languages        0.0937507482 2.300462e-02 2.590172e-02
## Medicine                 0.0401190744 4.975640e-03 2.642027e-02
## Law                      0.1159939588 2.856693e-04 5.974968e-02
## Cars                     0.0070047939 8.070194e-06 5.347431e-02
## Art.exhibitions          0.0455043263 4.927225e-03 8.655407e-03
## Religion                 0.0132195292 8.525535e-04 9.169263e-02
## Countryside..outdoors    0.0094372272 4.656242e-02 3.425985e-04
## Dancing                  0.0441988662 1.306815e-04 6.396327e-03
## Musical.instruments      0.0159576668 8.155659e-03 8.557544e-03
## Writing                  0.0135131084 1.575707e-02 5.224894e-02
## Passive.sport            0.0460988499 6.240336e-02 3.941477e-03
## Active.sport             0.0346488683 8.775064e-02 4.612235e-04
## Gardening                0.1278396340 7.384338e-04 5.406848e-03
## Celebrities              0.0304578582 1.796345e-03 2.266916e-02
## Shopping                 0.0016368989 4.210003e-04 1.011701e-01
## Science.and.technology   0.0030901151 3.377686e-03 8.782332e-03
## Theatre                  0.0199658558 1.228712e-02 8.886324e-05
## Fun.with.friends         0.0006224168 3.739844e-03 3.205220e-03
## Adrenaline.sports        0.0050385428 6.816204e-03 1.259127e-02
## Pets                     0.0058503171 3.756232e-04 1.582830e-01
##
##  Y Vars:
##                                CV 1         CV 2         CV 3         CV 4
## Music                     0.003304909 9.240339e-02 0.128628517 3.805234e-06
## Slow.songs.or.fast.songs 0.034263307 1.680912e-02 0.032663601 2.213327e-02
## Dance                     0.150153311 1.144260e-01 0.160761134 1.155620e-01
## Folk                      0.145757834 4.309961e-02 0.021970806 2.717429e-01
## Country                   0.065375424 1.361354e-03 0.017247760 1.067667e-01
## Classical.music           0.582469412 5.275896e-02 0.004438582 4.290831e-02
## Musical                   0.066159775 4.956592e-01 0.003328010 6.435561e-03
## Pop                       0.191416588 2.437817e-01 0.015454900 1.176593e-02
## Rock                      0.127456885 4.190167e-03 0.121957929 7.717145e-02
## Metal.or.Hardrock         0.143453067 1.942845e-01 0.052390922 1.581665e-04
## Punk                      0.085427978 5.008778e-02 0.115495350 8.003825e-02
## Hiphop..Rap               0.205051454 3.762411e-03 0.391655191 2.400665e-02
## Reggae..Ska               0.011433208 4.385984e-05 0.229970856 1.800811e-03
## Swing..Jazz               0.295603517 7.665567e-02 0.099542821 3.296794e-03
## Rock.n.roll               0.132622439 1.122267e-02 0.150495733 3.929621e-05
## Alternative               0.355356519 4.903910e-03 0.082276483 4.556329e-02
## Latino                    0.005031273 4.384689e-01 0.003118866 2.523014e-01
## Techno..Trance            0.043119170 2.577834e-04 0.161739171 1.361361e-01
## Opera                     0.435065460 5.152560e-02 0.001557401 4.527619e-02
##                                CV 5         CV 6         CV 7         CV
8
## Music                     0.1786653682 2.270673e-01 0.013032552 8.118315e-
03
## Slow.songs.or.fast.songs 0.0023245894 2.562581e-08 0.009251407 1.358311e-
```

```
03
## Dance                    0.0045490582 5.449969e-02 0.025990077 1.567414e-
06
## Folk                     0.0004077798 6.541874e-02 0.052983624 7.424175e-
02
## Country                  0.0001324360 9.290914e-02 0.188570678 3.789994e-
03
## Classical.music          0.0218842146 4.404838e-03 0.004386053 1.281760e-
01
## Musical                  0.1245274089 4.887987e-02 0.159400036 1.121708e-
02
## Pop                      0.0083041172 1.197277e-01 0.003758903 6.347205e-
02
## Rock                     0.0340595361 2.169193e-02 0.192259565 2.053029e-
02
## Metal.or.Hardrock        0.0071765533 6.685867e-04 0.143722406 2.706162e-
02
## Punk                     0.0216985469 8.075470e-02 0.018231286 9.628598e-
03
## Hiphop..Rap              0.0339392797 3.515570e-03 0.054292599 5.437549e-
03
## Reggae..Ska              0.0215290935 1.722559e-02 0.021077945 1.155942e-
01
## Swing..Jazz              0.0014723100 7.174291e-03 0.017281117 5.970655e-
02
## Rock.n.roll              0.0005453804 9.059920e-03 0.052543820 1.192929e-
01
## Alternative              0.0214414197 3.686491e-04 0.021297691 9.356881e-
02
## Latino                   0.0020027770 2.035507e-03 0.002113739 3.574849e-
03
## Techno..Trance           0.1344266335 1.278620e-01 0.002674984 1.330720e-
03
## Opera                    0.1105495613 1.347580e-03 0.012816235 7.278105e-
02
##                                 CV 9         CV 10         CV 11          CV
12
## Music                    2.766082e-02 0.0937855712 0.0316705600
0.002866629
## Slow.songs.or.fast.songs 1.921689e-01 0.0124576443 0.0581300602
0.003969992
## Dance                    1.576879e-03 0.1502869080 0.0678614291
0.035780558
## Folk                     3.034904e-02 0.0005012186 0.0603981634
0.098388892
## Country                  4.779094e-02 0.0006785446 0.0324297758
0.091241147
## Classical.music          1.167316e-05 0.0004414094 0.0459144082
0.005599811
## Musical                  1.937696e-03 0.0071072048 0.0139983199
```

```
                             0.028203818
## Pop                       4.981369e-03 0.0032774369 0.0167360209
0.067760495
## Rock                      3.142673e-02 0.0068819674 0.0023635997
0.164243259
## Metal.or.Hardrock         2.106710e-03 0.0288404778 0.0001984185
0.096125107
## Punk                      6.022894e-02 0.0012427249 0.0497807882
0.023762758
## Hiphop..Rap               4.511098e-02 0.0344109173 0.0546438686
0.003535787
## Reggae..Ska               2.236708e-01 0.0094694105 0.0033126943
0.009181306
## Swing..Jazz               2.136154e-02 0.1172676504 0.0198360344
0.051637501
## Rock.n.roll               2.649714e-02 0.0374244978 0.0307035311
0.003349829
## Alternative               1.020734e-02 0.0192390872 0.0419368066
0.010094937
## Latino                    5.295350e-02 0.1372519490 0.0424769295
0.001661322
## Techno..Trance            1.848912e-04 0.0164124266 0.0233890970
0.001917006
## Opera                     1.944740e-04 0.0649851664 0.0084070395
0.003240153
##                                 CV 13        CV 14        CV 15         CV
16
## Music                     0.0086790980 0.0025585389 0.0055255345 3.464213e-
04
## Slow.songs.or.fast.songs  0.0367475703 0.0788852770 0.0060109109 1.378172e-
02
## Dance                     0.0012068877 0.0364644590 0.0036517176 2.681398e-
02
## Folk                      0.0052860411 0.0565772253 0.0138939177 1.036475e-
02
## Country                   0.2313277622 0.0047311586 0.0226336663 5.921712e-
04
## Classical.music           0.0014622907 0.0146098545 0.0044976330 1.678243e-
03
## Musical                   0.0074350250 0.0011225988 0.0001429712 2.312745e-
05
## Pop                       0.0040197954 0.0260619450 0.1504509259 1.184035e-
02
## Rock                      0.0089312727 0.0005528238 0.0060019872 2.918862e-
02
## Metal.or.Hardrock         0.0749505409 0.0024773666 0.0022846738 1.439337e-
01
## Punk                      0.0031095014 0.0225756591 0.1133793100 1.942991e-
01
## Hiphop..Rap               0.0005191419 0.0056171744 0.0570849107 6.817854e-
```

```
02
## Reggae..Ska              0.0258704719 0.0018978282 0.0156213990 1.249784e-
01
## Swing..Jazz              0.0872414582 0.0208061140 0.0415096867 5.483308e-
04
## Rock.n.roll             0.0023397732 0.0053951667 0.1545715884 1.170657e-
01
## Alternative             0.0663748765 0.1102029422 0.0031373245 7.529969e-
03
## Latino                  0.0048138920 0.0105472667 0.0092797715 1.349374e-
02
## Techno..Trance          0.1395756090 0.0866578011 0.0217081625 3.272055e-
02
## Opera                   0.0002685473 0.0842179064 0.0098018219 1.948820e-
02
##                                  CV 17        CV 18        CV 19
## Music                     0.0068136299 0.094909037 7.396005e-02
## Slow.songs.or.fast.songs 0.2712264502 0.115132237 9.268561e-02
## Dance                     0.0005031343 0.048759363 1.151827e-03
## Folk                      0.0260839112 0.006489348 1.604441e-02
## Country                   0.0765088124 0.015820784 9.171405e-05
## Classical.music           0.0008362462 0.082431307 1.090799e-03
## Musical                   0.0213998000 0.003002759 1.974245e-05
## Pop                       0.0545042132 0.001752973 9.325739e-04
## Rock                      0.0265477755 0.001011508 1.235327e-01
## Metal.or.Hardrock         0.0086227604 0.042451871 2.909258e-02
## Punk                      0.0164633242 0.024145173 2.965026e-02
## Hiphop..Rap               0.0024997484 0.006289313 4.489086e-04
## Reggae..Ska               0.0023010197 0.025800073 1.392210e-01
## Swing..Jazz               0.0544453041 0.023846485 7.668226e-04
## Rock.n.roll               0.0756930657 0.014763068 5.637456e-02
## Alternative               0.0172515581 0.066631996 2.261638e-02
## Latino                    0.0050590882 0.005650946 8.164307e-03
## Techno..Trance            0.0396669809 0.002421127 2.779980e-02
## Opera                     0.0430371351 0.035399999 4.047785e-05
##
##
## Canonical Communalities (Fraction of Total Variance
## Explained for Each Variable, Within Sets):
##
##  X Vars:
##            History           Psychology            Politics
##          0.6066142            0.6762691           0.5105586
##        Mathematics              Physics            Internet
##          0.6689070            0.9145596           0.6029401
##                 PC    Economy.Management             Biology
##          0.6864150            0.5951371           0.7195955
##          Chemistry              Reading           Geography
##          0.6623358            0.8241075           0.3893877
##   Foreign.languages             Medicine                 Law
```

```
##             0.7186391                  0.5336398                  0.5857618
##                  Cars           Art.exhibitions                   Religion
##             0.6474701                  0.9072197                  0.7745245
##   Countryside..outdoors                   Dancing        Musical.instruments
##             0.6541713                  0.9008448                  0.6598382
##               Writing             Passive.sport               Active.sport
##             0.6995715                  0.4677508                  0.8001927
##             Gardening               Celebrities                   Shopping
##             0.5477663                  0.7964800                  0.8120558
##  Science.and.technology                   Theatre            Fun.with.friends
##             0.6205836                  0.8572682                  0.7879729
##      Adrenaline.sports                      Pets
##             0.7126683                  0.6518420
##
##  Y Vars:
##                    Music Slow.songs.or.fast.songs                      Dance
##                        1                        1                          1
##                     Folk                  Country            Classical.music
##                        1                        1                          1
##                  Musical                      Pop                       Rock
##                        1                        1                          1
##         Metal.or.Hardrock                     Punk                Hiphop..Rap
##                        1                        1                          1
##               Reggae..Ska               Swing..Jazz               Rock.n.roll
##                        1                        1                          1
##              Alternative                   Latino             Techno..Trance
##                        1                        1                          1
##                    Opera
##                        1
##
##
## Canonical Variate Adequacies (Fraction of Total Variance
## Explained by Each CV, Within Sets):
##
##
##  X Vars:
##       CV 1       CV 2       CV 3       CV 4       CV 5       CV 6       CV
## 7
## 0.07725556 0.08491983 0.06052654 0.04945809 0.02419494 0.03991788
## 0.02698301
##       CV 8       CV 9       CV 10      CV 11      CV 12      CV 13      CV
## 14
## 0.03678556 0.02929040 0.02957381 0.02695972 0.03316732 0.01970271
## 0.02405938
##       CV 15      CV 16      CV 17      CV 18      CV 19
## 0.02334322 0.02769463 0.02779529 0.02094335 0.02471278
##
##  Y Vars:
##       CV 1       CV 2       CV 3       CV 4       CV 5       CV 6       CV
## 7
```

```
## 0.16202745 0.09977382 0.09445758 0.06542668 0.03840190 0.04655851
0.05240446
##        CV 8       CV 9      CV 10      CV 11      CV 12      CV 13      CV
14
## 0.04309906 0.04107476 0.03905064 0.03179934 0.03697686 0.03737682
0.03010311
##       CV 15      CV 16      CV 17      CV 18      CV 19
## 0.03374673 0.04299292 0.03944547 0.03245839 0.03282550
##
##
## Redundancy Coefficients (Fraction of Total Variance
## Explained by Each CV, Across Sets):
##
##
##   X | Y:
##         CV 1         CV 2         CV 3         CV 4         CV 5
CV 6
## 0.0415203549 0.0312166805 0.0163191842 0.0109198544 0.0035977853
0.0053376357
##         CV 7         CV 8         CV 9        CV 10        CV 11        CV
12
## 0.0031796522 0.0037680859 0.0026886768 0.0023873613 0.0019997813
0.0018320815
##        CV 13        CV 14        CV 15        CV 16        CV 17        CV
18
## 0.0007376017 0.0008570108 0.0005916787 0.0006816433 0.0003137671
0.0001841181
##        CV 19
## 0.0001623919
##
##   Y | X:
##         CV 1         CV 2         CV 3         CV 4         CV 5
CV 6
## 0.0870802951 0.0366770331 0.0254676820 0.0144455613 0.0057103577
0.0062255899
##         CV 7         CV 8         CV 9        CV 10        CV 11        CV
12
## 0.0061752905 0.0044148013 0.0037704076 0.0031523838 0.0023587683
0.0020425111
##        CV 13        CV 14        CV 15        CV 16        CV 17        CV
18
## 0.0013992596 0.0010722925 0.0008553755 0.0010581776 0.0004452803
0.0002853496
##        CV 19
## 0.0002157020
##
##
## Aggregate Redundancy Coefficients (Total Variance
## Explained by All CVs, Across Sets):
##
```

```
##  X | Y: 0.1282953
##  Y | X: 0.2028521
```

```
round(pchisq(c2$chisq, c2$df, lower.tail=F), 3)
```

```
##   CV 1  CV 2  CV 3  CV 4  CV 5  CV 6  CV 7  CV 8  CV 9 CV 10 CV 11 CV 12 CV
13
## 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.001 0.035 0.255 0.679 0.959
0.996
## CV 14 CV 15 CV 16 CV 17 CV 18 CV 19
## 0.998 1.000 1.000 1.000 1.000 0.993
```