

# Correlation\_tests.R

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```
library(Hmisc)

## Loading required package: lattice
## Loading required package: survival
## Loading required package: Formula
## Loading required package: ggplot2

##
## Attaching package: 'Hmisc'

## The following objects are masked from 'package:base':
##
##      format.pval, round.POSIXt, trunc.POSIXt, units

##Correlation tests, save as tables
SampleFile <-"D:\\Downloads\\Korea May 2019\\Proportion vs. gender
bias\\Regression data 6 countries 96 and 12 -var3.txt" #regression data 6
countries.txt
##SampleFile <-"D:\\Downloads\\Korea May 2019\\Proportion vs. gender
bias\\regression data 6 countries 50 96 and 12.txt"
##SampleFile <-"D:\\Downloads\\Korea May 2019\\Proportion vs. gender
bias\\regression data 6 countries 100 96 and 12.txt"
options(digits=4)
options(scipen=10) #allow width of up to 10 digits before going into
scientific notation

AllData <-read.table(file=SampleFile, head=TRUE, sep = "\\t", na.strings="-
999")

#####
#####
## RQ1: Do large English-speaking countries have similar shares of female
first authors across fields?
#####
#####

#Compare female proportions between countries overall
FemaleProportionCols <-
c("auFem1All", "caFem1All", "ieFem1All", "nzFem1All", "ukFem1All", "usFem1All")
FemaleProportions <- AllData[FemaleProportionCols]
```

```
#round(corr(FemaleProportions,method="spearman", use =
"pairwise.complete.obs"), digits=4) #check if most appropriate is Spearman'
delete pairwise not casewise
rc <- rcorr(as.matrix(FemaleProportions),type="spearman")
print(rc$r, digits = 4)
```

```
##          auFem1All caFem1All ieFem1All nzFem1All ukFem1All usFem1All
## auFem1All    1.0000    0.9222    0.7732    0.7860    0.9196    0.9376
## caFem1All    0.9222    1.0000    0.7505    0.7976    0.9251    0.9341
## ieFem1All    0.7732    0.7505    1.0000    0.7168    0.7866    0.7711
## nzFem1All    0.7860    0.7976    0.7168    1.0000    0.7703    0.7694
## ukFem1All    0.9196    0.9251    0.7866    0.7703    1.0000    0.9298
## usFem1All    0.9376    0.9341    0.7711    0.7694    0.9298    1.0000
```

```
print(rc$n, digits = 4)
```

```
##          auFem1All caFem1All ieFem1All nzFem1All ukFem1All usFem1All
## auFem1All      330      328      321      324      328      330
## caFem1All      328      328      321      324      328      328
## ieFem1All      321      321      321      319      321      321
## nzFem1All      324      324      319      324      324      324
## ukFem1All      328      328      321      324      329      329
## usFem1All      330      328      321      324      329      331
```

```
print(rc$p, digits = 4)
```

```
##          auFem1All caFem1All ieFem1All nzFem1All ukFem1All usFem1All
## auFem1All      NA         0         0         0         0         0
## caFem1All      0         NA         0         0         0         0
## ieFem1All      0         0         NA         0         0         0
## nzFem1All      0         0         0         NA         0         0
## ukFem1All      0         0         0         0         NA         0
## usFem1All      0         0         0         0         0         NA
```

*#Compare female proportions between countries 96*

```
FemaleProportionCols <-
c("auFem1.96","caFem1.96","ieFem1.96","nzFem1.96","ukFem1.96","usFem1.96")
FemaleProportions <- AllData[FemaleProportionCols]
rc <- rcorr(as.matrix(FemaleProportions),type="spearman")
print(rc$r, digits = 4)
```

```
##          auFem1.96 caFem1.96 ieFem1.96 nzFem1.96 ukFem1.96 usFem1.96
## auFem1.96    1.0000    0.5948    0.3283    0.3449    0.6360    0.6926
## caFem1.96    0.5948    1.0000    0.3043    0.3476    0.6686    0.7670
## ieFem1.96    0.3283    0.3043    1.0000    0.2501    0.3685    0.3643
## nzFem1.96    0.3449    0.3476    0.2501    1.0000    0.4233    0.4075
## ukFem1.96    0.6360    0.6686    0.3685    0.4233    1.0000    0.7438
## usFem1.96    0.6926    0.7670    0.3643    0.4075    0.7438    1.0000
```

```
print(rc$n, digits = 4)
```

```
##          auFem1.96 caFem1.96 ieFem1.96 nzFem1.96 ukFem1.96 usFem1.96
## auFem1.96      300      298      190      236      300      300
## caFem1.96      298      309      191      236      307      309
## ieFem1.96      190      191      192      179      192      191
## nzFem1.96      236      236      179      237      237      236
## ukFem1.96      300      307      192      237      315      314
## usFem1.96      300      309      191      236      314      319
```

```
print(rc$P, digits = 4)
```

```
##          auFem1.96      caFem1.96      ieFem1.96      nzFem1.96
## auFem1.96      NA 0.0000000000 0.0000037539 0.0000005406117
## caFem1.96 0.0000000000      NA 0.0000186836 0.00000004151005
## ieFem1.96 0.00000375392 0.00001868357      NA 0.00073451289423
## nzFem1.96 0.00000005406 0.00000004151 0.0007345129      NA
## ukFem1.96 0.00000000000 0.00000000000 0.0000001448 0.00000000001006
## usFem1.96 0.00000000000 0.00000000000 0.0000002212 0.00000000007471
##          ukFem1.96      usFem1.96
## auFem1.96 0.000000000000000 0.000000000000000
## caFem1.96 0.000000000000000 0.000000000000000
## ieFem1.96 0.00000014478792 0.00000022123286
## nzFem1.96 0.00000000001006 0.00000000007471
## ukFem1.96      NA 0.000000000000000
## usFem1.96 0.000000000000000      NA
```

*#Compare female proportions between countries 12*

```
FemaleProportionCols <-
```

```
c("auFem1.14","caFem1.14","ieFem1.14","nzFem1.14","ukFem1.14","usFem1.14")
```

```
FemaleProportions <- AllData[FemaleProportionCols]
```

```
rc <- rcorr(as.matrix(FemaleProportions),type="spearman")
```

```
print(rc$r, digits = 4)
```

```
##          auFem1.14 caFem1.14 ieFem1.14 nzFem1.14 ukFem1.14 usFem1.14
## auFem1.14      1.0000      0.7990      0.6331      0.5181      0.7617      0.8740
## caFem1.14      0.7990      1.0000      0.6232      0.5826      0.8279      0.8547
## ieFem1.14      0.6331      0.6232      1.0000      0.4252      0.6437      0.7044
## nzFem1.14      0.5181      0.5826      0.4252      1.0000      0.5546      0.5724
## ukFem1.14      0.7617      0.8279      0.6437      0.5546      1.0000      0.8475
## usFem1.14      0.8740      0.8547      0.7044      0.5724      0.8475      1.0000
```

```
print(rc$n, digits = 4)
```

```
##          auFem1.14 caFem1.14 ieFem1.14 nzFem1.14 ukFem1.14 usFem1.14
## auFem1.14      324      320      296      299      323      323
## caFem1.14      320      323      296      298      322      323
## ieFem1.14      296      296      296      284      296      296
## nzFem1.14      299      298      284      299      298      298
## ukFem1.14      323      322      296      298      325      325
## usFem1.14      323      323      296      298      325      327
```

```
print(rc$P, digits = 4)
```

```
##          auFem1.14 caFem1.14          ieFem1.14          nzFem1.14
## auFem1.14      NA          0 0.0000000000000000 0.0000000000000000
## caFem1.14      0          NA 0.0000000000000000 0.0000000000000000
## ieFem1.14      0          0          NA 0.000000000000006706
## nzFem1.14      0          0 0.000000000000006706          NA
## ukFem1.14      0          0 0.0000000000000000 0.0000000000000000
## usFem1.14      0          0 0.0000000000000000 0.0000000000000000
##          ukFem1.14 usFem1.14
## auFem1.14      0          0
## caFem1.14      0          0
## ieFem1.14      0          0
## nzFem1.14      0          0
## ukFem1.14      NA          0
## usFem1.14      0          NA
```

*#Compare female proportions between countries change*

```
FemaleProportionCols <-
c("auChg1", "caChg1", "ieChg1", "nzChg1", "ukChg1", "usChg1")
FemaleProportions <- AllData[FemaleProportionCols]
rc <- rcorr(as.matrix(FemaleProportions), type="spearman")
print(rc$r, digits = 4)
```

```
##          auChg1      caChg1      ieChg1 nzChg1      ukChg1      usChg1
## auChg1 1.00000 0.2373897 0.0744127 0.1299 0.16680 0.35885
## caChg1 0.23739 1.0000000 -0.0009398 0.2115 0.25499 0.47292
## ieChg1 0.07441 -0.0009398 1.0000000 0.1749 0.06888 0.09424
## nzChg1 0.12986 0.2114842 0.1748787 1.0000 0.22098 0.25952
## ukChg1 0.16680 0.2549899 0.0688783 0.2210 1.00000 0.30462
## usChg1 0.35885 0.4729222 0.0942409 0.2595 0.30462 1.00000
```

```
print(rc$n, digits = 4)
```

```
##          auChg1 caChg1 ieChg1 nzChg1 ukChg1 usChg1
## auChg1      299      296      187      232      299      299
## caChg1      296      308      187      232      306      308
## ieChg1      187      187      187      175      187      187
## nzChg1      232      232      175      232      232      232
## ukChg1      299      306      187      232      314      314
## usChg1      299      308      187      232      314      319
```

```
print(rc$p, digits = 4)
```

```
##          auChg1      caChg1      ieChg1      nzChg1      ukChg1
## auChg1      NA 0.000036904 0.31146 0.04819018 0.00382335643
## caChg1 0.0000369035618      NA 0.98981 0.00119293 0.00000626820
## ieChg1 0.3114617779860 0.989814636      NA 0.02062851 0.34891575389
## nzChg1 0.0481901828738 0.001192932 0.02063      NA 0.00069976943
## ukChg1 0.0038233564330 0.000006268 0.34892 0.00069977      NA
## usChg1 0.0000000001624 0.000000000 0.19951 0.00006324 0.00000003634
##          usChg1
## auChg1 0.0000000001624
```

```

## caChg1 0.000000000000
## ieChg1 0.1995128067301
## nzChg1 0.0000632440320
## ukChg1 0.0000000363434
## usChg1 NA

#####
#####
## RQ2/5: Are there gender differences in first author citation advantages
similar for fields in large English-speaking countries?
#####
#####

#RQ2 Compare female 1st author citation advantages between countries [model
*with* authors]
FemaleAdvCols <- c("auFFA1", "caFFA1", "ieFFA1", "nzFFA1", "ukFFA1", "usFFA1")
FemaleAdv <- AllData[FemaleAdvCols]
#round(cor(FemaleAdv, method="spearman", use = "pairwise.complete.obs"),
digits=4) #check if most appropriate is Spearman' delete pairwise not
casewise
rc <- rcorr(as.matrix(FemaleAdv), type="spearman")
print(rc$r, digits = 4)

##          auFFA1 caFFA1  ieFFA1  nzFFA1  ukFFA1  usFFA1
## auFFA1  1.00000 0.1201  0.03312  0.08169 0.22886  0.25715
## caFFA1  0.12006 1.0000  0.12755  0.11496 0.17509  0.21610
## ieFFA1  0.03312 0.1275  1.00000 -0.10632 0.18977  0.14200
## nzFFA1  0.08169 0.1150 -0.10632  1.00000 0.05217 -0.02269
## ukFFA1  0.22886 0.1751  0.18977  0.05217 1.00000  0.27031
## usFFA1  0.25715 0.2161  0.14200 -0.02269 0.27031  1.00000

print(rc$n, digits = 4)

##          auFFA1 caFFA1 ieFFA1 nzFFA1 ukFFA1 usFFA1
## auFFA1      308    304    220    237    306    308
## caFFA1      304    310    221    238    308    310
## ieFFA1      220    221    222    202    222    222
## nzFFA1      237    238    202    239    239    239
## ukFFA1      306    308    222    239    319    318
## usFFA1      308    310    222    239    318    325

print(rc$p, digits = 4)

##          auFFA1    caFFA1    ieFFA1    nzFFA1    ukFFA1    usFFA1
## auFFA1          NA 0.0364079 0.625181 0.21020 0.0000532733 0.0000048390
## caFFA1 0.036407922          NA 0.058345 0.07672 0.0020406291 0.0001256043
## ieFFA1 0.625181459 0.0583449          NA 0.13206 0.0045480163 0.0344666927
## nzFFA1 0.210204391 0.0767249 0.132057          NA 0.4220605871 0.7270708132
## ukFFA1 0.000053273 0.0020406 0.004548 0.42206          NA 0.0000009942
## usFFA1 0.000004839 0.0001256 0.034467 0.72707 0.0000009942          NA

```

```
#RQ5 Compare female 1st author citation advantages between countries [model  
*without* authors]
```

```
FemaleAdvCols <- c("auFFA2","caFFA2","ieFFA2","nzFFA2","ukFFA2","usFFA2")
FemaleAdv <- AllData[FemaleAdvCols]
rc <- rcorr(as.matrix(FemaleAdv),type="spearman")
print(rc$r, digits = 4)
```

```
##          auFFA2  caFFA2  ieFFA2  nzFFA2  ukFFA2  usFFA2
## auFFA2  1.00000  0.16695  0.01463  0.10474  0.27160  0.30002
## caFFA2  0.16695  1.00000  0.09666  0.11273  0.24971  0.19516
## ieFFA2  0.01463  0.09666  1.00000  0.03238  0.18108  0.08202
## nzFFA2  0.10474  0.11273  0.03238  1.00000  0.08713  0.02515
## ukFFA2  0.27160  0.24971  0.18108  0.08713  1.00000  0.23157
## usFFA2  0.30002  0.19516  0.08202  0.02515  0.23157  1.00000
```

```
print(rc$n, digits = 4)
```

```
##          auFFA2  caFFA2  ieFFA2  nzFFA2  ukFFA2  usFFA2
## auFFA2      310      307      248      258      308      310
## caFFA2      307      313      249      259      312      313
## ieFFA2      248      249      250      231      249      250
## nzFFA2      258      259      231      260      260      260
## ukFFA2      308      312      249      260      321      320
## usFFA2      310      313      250      260      320      327
```

```
print(rc$P, digits = 4)
```

```
##          auFFA2      caFFA2      ieFFA2  nzFFA2      ukFFA2      usFFA2
## auFFA2          NA  0.003346615  0.818716  0.0932  0.000001308  0.00000007219
## caFFA2  0.00334661530          NA  0.128205  0.0701  0.000008043  0.00051576433
## ieFFA2  0.81871585638  0.128204952          NA  0.6244  0.004147127  0.19616395828
## nzFFA2  0.09319798521  0.070104445  0.624403          NA  0.161254930  0.68646692726
## ukFFA2  0.00000130809  0.000008043  0.004147  0.1613          NA  0.00002874221
## usFFA2  0.00000007219  0.000515764  0.196164  0.6865  0.000028742          NA
```

```
#Compare female last author citation advantages between countries [model with  
authors]
```

```
#FemaleAdvCols <- c("auFLA1","caFLA1","ieFLA1","nzFLA1","ukFLA1","usFLA1")
#FemaleAdv <- AllData[FemaleAdvCols]
#round(cor(FemaleAdv,method="spearman", use = "pairwise.complete.obs"),  
digits=4) #check if most appropriate is Spearman' delete pairwise not  
casewise
```

```
#Compare female last author citation advantages between countries [model  
without authors]
```

```
#FemaleAdvCols <- c("auFLA2","caFLA2","ieFLA2","nzFLA2","ukFLA2","usFLA2")
#FemaleAdv <- AllData[FemaleAdvCols]
#round(cor(FemaleAdv,method="spearman", use = "pairwise.complete.obs"),  
digits=4) #check if most appropriate is Spearman' delete pairwise not  
casewise
```

```
#Compare female 1st author citation advantages between countries [model
```

without authors]

```
#####  
#####  
## RQ3/5: Are female first author citation advantages higher in fields with a  
greater proportion of females?  
#####  
#####  
  
##RQ3  
##All years proportion  
FemaleProportionsAndFemale1AdvCols <-  
c("au1CtyMFto14", "ca1CtyMFto14", "ie1CtyMFto14", "nz1CtyMFto14", "uk1CtyMFto14",  
"us1CtyMFto14", "auFFA1", "caFFA1", "ieFFA1", "nzFFA1", "ukFFA1", "usFFA1")  
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]  
#round(cor(FemaleProportionsAndFemale1Adv, method="spearman", use =  
"pairwise.complete.obs"), digits=4) #check if most appropriate is Spearman'  
delete pairwise not casewise  
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv), type="spearman")  
print(rc$r, digits = 4)  
  
##          au1CtyMFto14  ca1CtyMFto14  ie1CtyMFto14  nz1CtyMFto14  
## au1CtyMFto14      1.00000      0.9369960      0.872717      0.9406520  
## ca1CtyMFto14      0.93700      1.0000000      0.904976      0.8996829  
## ie1CtyMFto14      0.87272      0.9049760      1.000000      0.8368303  
## nz1CtyMFto14      0.94065      0.8996829      0.836830      1.0000000  
## uk1CtyMFto14      0.93806      0.9243935      0.918613      0.8971572  
## us1CtyMFto14      0.92718      0.9605917      0.889409      0.8734580  
## auFFA1            0.02485     -0.0454594     -0.047366     -0.0082712  
## caFFA1            0.01663     -0.0520277      0.006379      0.0128900  
## ieFFA1            0.03439      0.0002281     -0.068143      0.0160466  
## nzFFA1           -0.14441     -0.1145262      0.020862     -0.1971034  
## ukFFA1            0.02878     -0.0496942      0.003919     -0.0007309  
## usFFA1           -0.10933     -0.1613846     -0.148325     -0.0856320  
##          uk1CtyMFto14  us1CtyMFto14      auFFA1      caFFA1      ieFFA1  
## au1CtyMFto14      0.938058      0.92718      0.024849      0.016631      0.0343939  
## ca1CtyMFto14      0.924393      0.96059     -0.045459     -0.052028      0.0002281  
## ie1CtyMFto14      0.918613      0.88941     -0.047366      0.006379     -0.0681432  
## nz1CtyMFto14      0.897157      0.87346     -0.008271      0.012890      0.0160466  
## uk1CtyMFto14      1.000000      0.92635     -0.034613      0.023336      0.0276791  
## us1CtyMFto14      0.926354      1.00000     -0.075734     -0.043400     -0.0116147  
## auFFA1           -0.034613     -0.07573      1.000000      0.120064      0.0331156  
## caFFA1            0.023336     -0.04340      0.120064      1.000000      0.1275462  
## ieFFA1            0.027679     -0.01161      0.033116      0.127546      1.0000000  
## nzFFA1           -0.079657     -0.12597      0.081687      0.114958     -0.1063237  
## ukFFA1            0.009938     -0.07132      0.228860      0.175094      0.1897727  
## usFFA1           -0.119105     -0.18996      0.257146      0.216103      0.1420023  
##          nzFFA1      ukFFA1      usFFA1  
## au1CtyMFto14 -0.14441      0.0287822 -0.10933  
## ca1CtyMFto14 -0.11453     -0.0496942 -0.16138
```

```
## ie1CtyMFto14  0.02086  0.0039190 -0.14833
## nz1CtyMFto14 -0.19710 -0.0007309 -0.08563
## uk1CtyMFto14 -0.07966  0.0099382 -0.11911
## us1CtyMFto14 -0.12597 -0.0713183 -0.18996
## auFFA1        0.08169  0.2288597  0.25715
## caFFA1        0.11496  0.1750941  0.21610
## ieFFA1       -0.10632  0.1897727  0.14200
## nzFFA1        1.00000  0.0521703 -0.02269
## ukFFA1        0.05217  1.0000000  0.27031
## usFFA1       -0.02269  0.2703133  1.00000
```

```
print(rc$n, digits = 4)
```

```
##          au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14
## au1CtyMFto14          334          334          334          334
## ca1CtyMFto14          334          334          334          334
## ie1CtyMFto14          334          334          334          334
## nz1CtyMFto14          334          334          334          334
## uk1CtyMFto14          334          334          334          334
## us1CtyMFto14          334          334          334          334
## auFFA1              308          308          308          308
## caFFA1              310          310          310          310
## ieFFA1              222          222          222          222
## nzFFA1              239          239          239          239
## ukFFA1              319          319          319          319
## usFFA1              325          325          325          325
##          uk1CtyMFto14 us1CtyMFto14 auFFA1 caFFA1 ieFFA1 nzFFA1 ukFFA1
## au1CtyMFto14          334          334      308      310      222      239      319
## ca1CtyMFto14          334          334      308      310      222      239      319
## ie1CtyMFto14          334          334      308      310      222      239      319
## nz1CtyMFto14          334          334      308      310      222      239      319
## uk1CtyMFto14          334          334      308      310      222      239      319
## us1CtyMFto14          334          334      308      310      222      239      319
## auFFA1              308          308      308      304      220      237      306
## caFFA1              310          310      304      310      221      238      308
## ieFFA1              222          222      220      221      222      202      222
## nzFFA1              239          239      237      238      202      239      239
## ukFFA1              319          319      306      308      222      239      319
## usFFA1              325          325      308      310      222      239      318
##          usFFA1
## au1CtyMFto14          325
## ca1CtyMFto14          325
## ie1CtyMFto14          325
## nz1CtyMFto14          325
## uk1CtyMFto14          325
## us1CtyMFto14          325
## auFFA1              308
## caFFA1              310
## ieFFA1              222
## nzFFA1              239
```



```

## ukFFA1          318
## usFFA1          325

print(rc$P, digits = 4)

##          au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14
## au1CtyMFto14          NA      0.00000      0.000000      0.000000
## ca1CtyMFto14      0.00000          NA      0.000000      0.000000
## ie1CtyMFto14      0.00000      0.00000          NA      0.000000
## nz1CtyMFto14      0.00000      0.00000      0.000000          NA
## uk1CtyMFto14      0.00000      0.00000      0.000000      0.000000
## us1CtyMFto14      0.00000      0.00000      0.000000      0.000000
## auFFA1          0.66401      0.42663      0.407474      0.885049
## caFFA1          0.77055      0.36126      0.910935      0.821166
## ieFFA1          0.61025      0.99730      0.312134      0.812071
## nzFFA1          0.02558      0.07722      0.748313      0.002204
## ukFFA1          0.60854      0.37636      0.944416      0.989626
## usFFA1          0.04893      0.00353      0.007395      0.123405
##          uk1CtyMFto14 us1CtyMFto14          auFFA1          caFFA1          ieFFA1
## au1CtyMFto14      0.00000      0.0000000 0.664009483 0.7705538 0.610251
## ca1CtyMFto14      0.00000      0.0000000 0.426627726 0.3612636 0.997303
## ie1CtyMFto14      0.00000      0.0000000 0.407474209 0.9109348 0.312134
## nz1CtyMFto14      0.00000      0.0000000 0.885048924 0.8211664 0.812071
## uk1CtyMFto14          NA      0.0000000 0.545066815 0.6823395 0.681689
## us1CtyMFto14      0.00000          NA 0.184960842 0.4464177 0.863372
## auFFA1          0.54507      0.1849608          NA 0.0364079 0.625181
## caFFA1          0.68234      0.4464177 0.036407922          NA 0.058345
## ieFFA1          0.68169      0.8633719 0.625181459 0.0583449          NA
## nzFFA1          0.21984      0.0517741 0.210204391 0.0767249 0.132057
## ukFFA1          0.85966      0.2039411 0.000053273 0.0020406 0.004548
## usFFA1          0.03183      0.0005758 0.000004839 0.0001256 0.034467
##          nzFFA1          ukFFA1          usFFA1
## au1CtyMFto14 0.025583 0.6085430623 0.0489258495
## ca1CtyMFto14 0.077217 0.3763568048 0.0035303231
## ie1CtyMFto14 0.748313 0.9444158037 0.0073952448
## nz1CtyMFto14 0.002204 0.9896260286 0.1234053456
## uk1CtyMFto14 0.219839 0.8596580424 0.0318270492
## us1CtyMFto14 0.051774 0.2039410548 0.0005758237
## auFFA1          0.210204 0.0000532733 0.0000048390
## caFFA1          0.076725 0.0020406291 0.0001256043
## ieFFA1          0.132057 0.0045480163 0.0344666927
## nzFFA1          NA 0.4220605871 0.7270708132
## ukFFA1          0.422061          NA 0.0000009942
## usFFA1          0.727071 0.0000009942          NA

##96 proportion
FemaleProportionsAndFemale1AdvCols <-
c("auFem1.96","caFem1.96","ieFem1.96","nzFem1.96","ukFem1.96","usFem1.96",
"auFFA1","caFFA1","ieFFA1","nzFFA1","ukFFA1","usFFA1")
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]

```

```
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv),type="spearman")
print(rc$r, digits = 4)
```

```
##          auFem1.96 caFem1.96 ieFem1.96 nzFem1.96 ukFem1.96 usFem1.96
## auFem1.96  1.00000  0.59480  0.328320  0.344859  0.6360  0.69258
## caFem1.96  0.59480  1.00000  0.304315  0.347646  0.6686  0.76703
## ieFem1.96  0.32832  0.30432  1.000000  0.250091  0.3685  0.36428
## nzFem1.96  0.34486  0.34765  0.250091  1.000000  0.4233  0.40745
## ukFem1.96  0.63599  0.66865  0.368505  0.423347  1.0000  0.74383
## usFem1.96  0.69258  0.76703  0.364282  0.407452  0.7438  1.00000
## auFFA1     0.15287  0.14468  0.097343  0.073088  0.1670  0.10367
## caFFA1     0.07519  0.12060 -0.027148  0.158185  0.1881  0.09284
## ieFFA1     0.02743  0.09964  0.093012  0.006497  0.1022  0.13558
## nzFFA1    -0.15985 -0.15931 -0.003985 -0.157692 -0.1715 -0.16549
## ukFFA1     0.12849  0.13286  0.105836 -0.049074  0.1012  0.11254
## usFFA1     0.13866  0.24458  0.008205  0.097874  0.1660  0.20536
##          auFFA1  caFFA1  ieFFA1  nzFFA1  ukFFA1  usFFA1
## auFem1.96 0.15287 0.07519 0.027432 -0.159847 0.12849 0.138664
## caFem1.96 0.14468 0.12060 0.099636 -0.159311 0.13286 0.244577
## ieFem1.96 0.09734 -0.02715 0.093012 -0.003985 0.10584 0.008205
## nzFem1.96 0.07309 0.15819 0.006497 -0.157692 -0.04907 0.097874
## ukFem1.96 0.16701 0.18812 0.102162 -0.171464 0.10120 0.165990
## usFem1.96 0.10367 0.09284 0.135578 -0.165494 0.11254 0.205356
## auFFA1     1.00000 0.12006 0.033116 0.081687 0.22886 0.257146
## caFFA1     0.12006 1.00000 0.127546 0.114958 0.17509 0.216103
## ieFFA1     0.03312 0.12755 1.000000 -0.106324 0.18977 0.142002
## nzFFA1     0.08169 0.11496 -0.106324 1.000000 0.05217 -0.022693
## ukFFA1     0.22886 0.17509 0.189773 0.052170 1.00000 0.270313
## usFFA1     0.25715 0.21610 0.142002 -0.022693 0.27031 1.000000
```

```
print(rc$n, digits = 4)
```

```
##          auFem1.96 caFem1.96 ieFem1.96 nzFem1.96 ukFem1.96 usFem1.96
## auFem1.96      300      298      190      236      300      300
## caFem1.96      298      309      191      236      307      309
## ieFem1.96      190      191      192      179      192      191
## nzFem1.96      236      236      179      237      237      236
## ukFem1.96      300      307      192      237      315      314
## usFem1.96      300      309      191      236      314      319
## auFFA1         294      303      189      234      302      306
## caFFA1         294      302      190      235      303      308
## ieFFA1         221      221      168      195      222      222
## nzFFA1         239      238      175      211      239      239
## ukFFA1         299      307      192      236      311      315
## usFFA1         300      308      191      236      313      318
##          auFFA1 caFFA1 ieFFA1 nzFFA1 ukFFA1 usFFA1
## auFem1.96     294     294     221     239     299     300
## caFem1.96     303     302     221     238     307     308
## ieFem1.96     189     190     168     175     192     191
## nzFem1.96     234     235     195     211     236     236
```

```
## ukFem1.96      302      303      222      239      311      313
## usFem1.96      306      308      222      239      315      318
## auFFA1         308      304      220      237      306      308
## caFFA1         304      310      221      238      308      310
## ieFFA1         220      221      222      202      222      222
## nzFFA1         237      238      202      239      239      239
## ukFFA1         306      308      222      239      319      318
## usFFA1         308      310      222      239      318      325
```

```
print(rc$P, digits = 4)
```

```
##              auFem1.96      caFem1.96      ieFem1.96      nzFem1.96
## auFem1.96      NA 0.0000000000 0.0000037539 0.0000005406117
## caFem1.96 0.0000000000      NA 0.0000186836 0.00000004151005
## ieFem1.96 0.00000375392 0.00001868357      NA 0.00073451289423
## nzFem1.96 0.00000005406 0.00000004151 0.0007345129      NA
## ukFem1.96 0.00000000000 0.00000000000 0.0000001448 0.00000000001006
## usFem1.96 0.00000000000 0.00000000000 0.0000002212 0.00000000007471
## auFFA1      0.00865215715 0.01168965837 0.1826860858 0.26547589577267
## caFFA1      0.19856563775 0.03618883880 0.7100348078 0.01521137218715
## ieFFA1      0.68506272725 0.13981637542 0.2304606675 0.92817086664919
## nzFFA1      0.01335568777 0.01387353203 0.9582580595 0.02194313986240
## ukFFA1      0.02630558214 0.01987458425 0.1440046382 0.45304734586061
## usFFA1      0.01624664213 0.00001418590 0.9103043590 0.13382478446963
##              ukFem1.96      usFem1.96      auFFA1      caFFA1      ieFFA1
## auFem1.96 0.00000000000000 0.00000000000000 0.008652157 0.1985656 0.685063
## caFem1.96 0.00000000000000 0.00000000000000 0.011689658 0.0361888 0.139816
## ieFem1.96 0.00000014478792 0.00000022123286 0.182686086 0.7100348 0.230461
## nzFem1.96 0.000000000001006 0.00000000007471 0.265475896 0.0152114 0.928171
## ukFem1.96      NA 0.000000000000000 0.003606490 0.0010004 0.129126
## usFem1.96 0.00000000000000      NA 0.070143559 0.1038854 0.043592
## auFFA1      0.00360649048260 0.07014355901769      NA 0.0364079 0.625181
## caFFA1      0.00100036350137 0.10388538265556 0.036407922      NA 0.058345
## ieFFA1      0.12912597238305 0.04359192245218 0.625181459 0.0583449      NA
## nzFFA1      0.00789378523925 0.01038466633920 0.210204391 0.0767249 0.132057
## ukFFA1      0.07472927822776 0.04596589295947 0.000053273 0.0020406 0.004548
## usFFA1      0.00322573622001 0.00022694001173 0.000004839 0.0001256 0.034467
##              nzFFA1      ukFFA1      usFFA1
## auFem1.96 0.013356 0.0263055821 0.0162466421
## caFem1.96 0.013874 0.0198745843 0.0000141859
## ieFem1.96 0.958258 0.1440046382 0.9103043590
## nzFem1.96 0.021943 0.4530473459 0.1338247845
## ukFem1.96 0.007894 0.0747292782 0.0032257362
## usFem1.96 0.010385 0.0459658930 0.0002269400
## auFFA1      0.210204 0.0000532733 0.0000048390
## caFFA1      0.076725 0.0020406291 0.0001256043
## ieFFA1      0.132057 0.0045480163 0.0344666927
## nzFFA1      NA 0.4220605871 0.7270708132
## ukFFA1      0.422061      NA 0.0000009942
## usFFA1      0.727071 0.0000009942      NA
```

```
##12 proportion
FemaleProportionsAndFemale1AdvCols <-
c("auFem1.14", "caFem1.14", "ieFem1.14", "nzFem1.14", "ukFem1.14", "usFem1.14",
  "auFFA1", "caFFA1", "ieFFA1", "nzFFA1", "ukFFA1", "usFFA1")
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv), type="spearman")
print(rc$r, digits = 4)
```

```
##          auFem1.14 caFem1.14 ieFem1.14 nzFem1.14 ukFem1.14 usFem1.14
## auFem1.14  1.00000  0.7990  0.633145  0.51807  0.7617  0.87400
## caFem1.14  0.79905  1.0000  0.623202  0.58260  0.8279  0.85472
## ieFem1.14  0.63314  0.6232  1.000000  0.42524  0.6437  0.70442
## nzFem1.14  0.51807  0.5826  0.425242  1.00000  0.5546  0.57239
## ukFem1.14  0.76175  0.8279  0.643686  0.55457  1.0000  0.84750
## usFem1.14  0.87400  0.8547  0.704424  0.57239  0.8475  1.00000
## auFFA1     0.23030  0.1487  0.110209  0.07820  0.1113  0.14589
## caFFA1     0.09169  0.1134  0.140973  0.05983  0.1142  0.08798
## ieFFA1     0.17965  0.1934  0.082604  0.11502  0.1590  0.16752
## nzFFA1     -0.18049 -0.1870 -0.139972 -0.04431 -0.1731 -0.16587
## ukFFA1     0.17649  0.1807 -0.003269  0.16271  0.1565  0.15334
## usFFA1     0.23121  0.1896  0.113079  0.15631  0.1912  0.22197
##          auFFA1 caFFA1 ieFFA1 nzFFA1 ukFFA1 usFFA1
## auFem1.14  0.23030  0.09169  0.17965 -0.18049  0.176491  0.23121
## caFem1.14  0.14875  0.11342  0.19338 -0.18697  0.180658  0.18961
## ieFem1.14  0.11021  0.14097  0.08260 -0.13997 -0.003269  0.11308
## nzFem1.14  0.07820  0.05983  0.11502 -0.04431  0.162706  0.15631
## ukFem1.14  0.11134  0.11421  0.15897 -0.17311  0.156501  0.19123
## usFem1.14  0.14589  0.08798  0.16752 -0.16587  0.153338  0.22197
## auFFA1     1.00000  0.12006  0.03312  0.08169  0.228860  0.25715
## caFFA1     0.12006  1.00000  0.12755  0.11496  0.175094  0.21610
## ieFFA1     0.03312  0.12755  1.00000 -0.10632  0.189773  0.14200
## nzFFA1     0.08169  0.11496 -0.10632  1.00000  0.052170 -0.02269
## ukFFA1     0.22886  0.17509  0.18977  0.05217  1.000000  0.27031
## usFFA1     0.25715  0.21610  0.14200 -0.02269  0.270313  1.00000
```

```
print(rc$n, digits = 4)
```

```
##          auFem1.14 caFem1.14 ieFem1.14 nzFem1.14 ukFem1.14 usFem1.14
## auFem1.14      324      320      296      299      323      323
## caFem1.14      320      323      296      298      322      323
## ieFem1.14      296      296      296      284      296      296
## nzFem1.14      299      298      284      299      298      298
## ukFem1.14      323      322      296      298      325      325
## usFem1.14      323      323      296      298      325      327
## auFFA1         308      306      288      294      307      307
## caFFA1         310      309      289      294      310      310
## ieFFA1         222      222      222      220      222      222
## nzFFA1         239      239      237      239      239      239
## ukFFA1         316      317      294      296      318      318
## usFFA1         323      321      295      298      324      324
```

```
##          auFFA1 caFFA1 ieFFA1 nzFFA1 ukFFA1 usFFA1
## auFem1.14    308    310    222    239    316    323
## caFem1.14    306    309    222    239    317    321
## ieFem1.14    288    289    222    237    294    295
## nzFem1.14    294    294    220    239    296    298
## ukFem1.14    307    310    222    239    318    324
## usFem1.14    307    310    222    239    318    324
## auFFA1       308    304    220    237    306    308
## caFFA1       304    310    221    238    308    310
## ieFFA1       220    221    222    202    222    222
## nzFFA1       237    238    202    239    239    239
## ukFFA1       306    308    222    239    319    318
## usFFA1       308    310    222    239    318    325
```

```
print(rc$P, digits = 4)
```

```
##          auFem1.14 caFem1.14          ieFem1.14          nzFem1.14
## auFem1.14          NA  0.000000 0.000000000000000000 0.000000000000000000
## caFem1.14 0.00000000          NA 0.000000000000000000 0.000000000000000000
## ieFem1.14 0.00000000 0.000000          NA 0.000000000000006706
## nzFem1.14 0.00000000 0.000000 0.000000000000006706          NA
## ukFem1.14 0.00000000 0.000000 0.000000000000000000 0.000000000000000000
## usFem1.14 0.00000000 0.000000 0.000000000000000000 0.000000000000000000
## auFFA1     0.00004499 0.009164 0.06178126259823369 0.18115689860004447
## caFFA1     0.10712083 0.046367 0.01647829149959468 0.30656914300678428
## ieFFA1     0.00728588 0.003823 0.22022810715563534 0.08876545638977795
## nzFFA1     0.00513045 0.003720 0.03123482089429164 0.49542736764724538
## ukFFA1     0.00163436 0.001236 0.95548850783891814 0.00501318268437467
## usFFA1     0.00002713 0.000638 0.05235786238442186 0.00685863878198756
##          ukFem1.14 usFem1.14          auFFA1          caFFA1          ieFFA1          nzFFA1
## auFem1.14 0.00000000 0.00000000 0.000044987 0.1071208 0.007286 0.005130
## caFem1.14 0.00000000 0.00000000 0.009163863 0.0463666 0.003823 0.003720
## ieFem1.14 0.00000000 0.00000000 0.061781263 0.0164783 0.220228 0.031235
## nzFem1.14 0.00000000 0.00000000 0.181156899 0.3065691 0.088765 0.495427
## ukFem1.14          NA 0.00000000 0.051298446 0.0444934 0.017775 0.007308
## usFem1.14 0.00000000          NA 0.010480389 0.1221511 0.012436 0.010209
## auFFA1     0.0512984 0.01048039          NA 0.0364079 0.625181 0.210204
## caFFA1     0.0444934 0.12215109 0.036407922          NA 0.058345 0.076725
## ieFFA1     0.0177746 0.01243597 0.625181459 0.0583449          NA 0.132057
## nzFFA1     0.0073076 0.01020934 0.210204391 0.0767249 0.132057          NA
## ukFFA1     0.0051566 0.00614656 0.000053273 0.0020406 0.004548 0.422061
## usFFA1     0.0005384 0.00005569 0.000004839 0.0001256 0.034467 0.727071
##          ukFFA1          usFFA1
## auFem1.14 0.0016343556 0.0000271315
## caFem1.14 0.0012359835 0.0006379535
## ieFem1.14 0.9554885078 0.0523578624
## nzFem1.14 0.0050131827 0.0068586388
## ukFem1.14 0.0051566370 0.0005384297
## usFem1.14 0.0061465596 0.0000556931
## auFFA1     0.0000532733 0.0000048390
```

```

## caFFA1      0.0020406291 0.0001256043
## ieFFA1      0.0045480163 0.0344666927
## nzFFA1      0.4220605871 0.7270708132
## ukFFA1      NA 0.0000009942
## usFFA1      0.0000009942 NA

##RQ5
##All years proportion
FemaleProportionsAndFemale1AdvCols <-
c("au1CtyMFto14", "ca1CtyMFto14", "ie1CtyMFto14", "nz1CtyMFto14", "uk1CtyMFto14",
  "us1CtyMFto14", "auFFA2", "caFFA2", "ieFFA2", "nzFFA2", "ukFFA2", "usFFA2")
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv), type="spearman")
print(rc$r, digits = 4)

##          au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14
## au1CtyMFto14      1.000000      0.93700      0.872717      0.940652
## ca1CtyMFto14      0.936996      1.00000      0.904976      0.899683
## ie1CtyMFto14      0.872717      0.90498      1.000000      0.836830
## nz1CtyMFto14      0.940652      0.89968      0.836830      1.000000
## uk1CtyMFto14      0.938058      0.92439      0.918613      0.897157
## us1CtyMFto14      0.927182      0.96059      0.889409      0.873458
## auFFA2            0.012958     -0.05937     -0.058881     -0.009554
## caFFA2            0.002903     -0.05773      0.001280      0.005851
## ieFFA2            0.061681      0.05560      0.005324      0.062731
## nzFFA2           -0.116427     -0.09495      0.015734     -0.163568
## ukFFA2           -0.032188     -0.09176     -0.054279     -0.048582
## usFFA2           -0.102004     -0.13508     -0.134567     -0.085815
##          uk1CtyMFto14 us1CtyMFto14      auFFA2      caFFA2      ieFFA2
## au1CtyMFto14      0.93806      0.92718      0.012958      0.002903      0.061681
## ca1CtyMFto14      0.92439      0.96059     -0.059372     -0.057731      0.055605
## ie1CtyMFto14      0.91861      0.88941     -0.058881      0.001280      0.005324
## nz1CtyMFto14      0.89716      0.87346     -0.009554      0.005851      0.062731
## uk1CtyMFto14      1.00000      0.92635     -0.037408      0.017668      0.076580
## us1CtyMFto14      0.92635      1.00000     -0.080973     -0.048124      0.041603
## auFFA2           -0.03741     -0.08097      1.000000      0.166954      0.014627
## caFFA2            0.01767     -0.04812      0.166954      1.000000      0.096664
## ieFFA2            0.07658      0.04160      0.014627      0.096664      1.000000
## nzFFA2           -0.07450     -0.11192      0.104736      0.112731      0.032382
## ukFFA2           -0.04792     -0.10228      0.271605      0.249714      0.181080
## usFFA2           -0.12546     -0.15592      0.300020      0.195164      0.082022
##          nzFFA2      ukFFA2      usFFA2
## au1CtyMFto14 -0.11643 -0.03219 -0.10200
## ca1CtyMFto14 -0.09495 -0.09176 -0.13508
## ie1CtyMFto14  0.01573 -0.05428 -0.13457
## nz1CtyMFto14 -0.16357 -0.04858 -0.08581
## uk1CtyMFto14 -0.07450 -0.04792 -0.12546
## us1CtyMFto14 -0.11192 -0.10228 -0.15592
## auFFA2        0.10474  0.27160  0.30002
## caFFA2        0.11273  0.24971  0.19516

```

```

## ieFFA2      0.03238  0.18108  0.08202
## nzFFA2      1.00000  0.08713  0.02515
## ukFFA2      0.08713  1.00000  0.23157
## usFFA2      0.02515  0.23157  1.00000

print(rc$n, digits = 4)

##          au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14
## au1CtyMFto14      334      334      334      334
## ca1CtyMFto14      334      334      334      334
## ie1CtyMFto14      334      334      334      334
## nz1CtyMFto14      334      334      334      334
## uk1CtyMFto14      334      334      334      334
## us1CtyMFto14      334      334      334      334
## auFFA2            310      310      310      310
## caFFA2            313      313      313      313
## ieFFA2            250      250      250      250
## nzFFA2            260      260      260      260
## ukFFA2            321      321      321      321
## usFFA2            327      327      327      327
##          uk1CtyMFto14 us1CtyMFto14 auFFA2 caFFA2 ieFFA2 nzFFA2 ukFFA2
## au1CtyMFto14      334      334      310      313      250      260      321
## ca1CtyMFto14      334      334      310      313      250      260      321
## ie1CtyMFto14      334      334      310      313      250      260      321
## nz1CtyMFto14      334      334      310      313      250      260      321
## uk1CtyMFto14      334      334      310      313      250      260      321
## us1CtyMFto14      334      334      310      313      250      260      321
## auFFA2            310      310      310      307      248      258      308
## caFFA2            313      313      307      313      249      259      312
## ieFFA2            250      250      248      249      250      231      249
## nzFFA2            260      260      258      259      231      260      260
## ukFFA2            321      321      308      312      249      260      321
## usFFA2            327      327      310      313      250      260      320
##          usFFA2
## au1CtyMFto14      327
## ca1CtyMFto14      327
## ie1CtyMFto14      327
## nz1CtyMFto14      327
## uk1CtyMFto14      327
## us1CtyMFto14      327
## auFFA2            310
## caFFA2            313
## ieFFA2            250
## nzFFA2            260
## ukFFA2            320
## usFFA2            327

print(rc$P, digits = 4)

##          au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14
## au1CtyMFto14      NA      0.00000      0.00000      0.00000

```



```
## ca1CtyMFto14      0.00000      NA      0.00000      0.00000
## ie1CtyMFto14      0.00000      0.00000      NA      0.00000
## nz1CtyMFto14      0.00000      0.00000      0.00000      NA
## uk1CtyMFto14      0.00000      0.00000      0.00000      0.00000
## us1CtyMFto14      0.00000      0.00000      0.00000      0.00000
## auFFA2            0.82024      0.29739      0.30141      0.866939
## caFFA2            0.95921      0.30862      0.98201      0.917882
## ieFFA2            0.33140      0.38132      0.93324      0.323221
## nzFFA2            0.06084      0.12675      0.80065      0.008228
## ukFFA2            0.56556      0.10077      0.33234      0.385646
## usFFA2            0.06543      0.01451      0.01488      0.121449
##      uk1CtyMFto14 us1CtyMFto14      auFFA2      caFFA2      ieFFA2
## au1CtyMFto14      0.00000      0.000000 0.82024432439 0.959206198 0.331397
## ca1CtyMFto14      0.00000      0.000000 0.29738817339 0.308615585 0.381322
## ie1CtyMFto14      0.00000      0.000000 0.30140976102 0.982006542 0.933243
## nz1CtyMFto14      0.00000      0.000000 0.86693882280 0.917881934 0.323221
## uk1CtyMFto14      NA      0.000000 0.51169436370 0.755538269 0.227608
## us1CtyMFto14      0.00000      NA 0.15495076296 0.396164748 0.512606
## auFFA2            0.51169      0.154951      NA 0.003346615 0.818716
## caFFA2            0.75554      0.396165 0.00334661530      NA 0.128205
## ieFFA2            0.22761      0.512606 0.81871585638 0.128204952      NA
## nzFFA2            0.23123      0.071606 0.09319798521 0.070104445 0.624403
## ukFFA2            0.39212      0.067240 0.00000130809 0.000008043 0.004147
## usFFA2            0.02327      0.004712 0.00000007219 0.000515764 0.196164
##      nzFFA2      ukFFA2      usFFA2
## au1CtyMFto14 0.060840 0.565561784 0.06543076494
## ca1CtyMFto14 0.126746 0.100766139 0.01450727168
## ie1CtyMFto14 0.800655 0.332339356 0.01488493776
## nz1CtyMFto14 0.008228 0.385645731 0.12144909842
## uk1CtyMFto14 0.231228 0.392116296 0.02326629256
## us1CtyMFto14 0.071606 0.067240010 0.00471178468
## auFFA2      0.093198 0.000001308 0.00000007219
## caFFA2      0.070104 0.000008043 0.00051576433
## ieFFA2      0.624403 0.004147127 0.19616395828
## nzFFA2      NA 0.161254930 0.68646692726
## ukFFA2      0.161255      NA 0.00002874221
## usFFA2      0.686467 0.000028742      NA
```

```
##96 proportion
```

```
FemaleProportionsAndFemale1AdvCols <-
```

```
c("auFem1.96","caFem1.96","ieFem1.96","nzFem1.96","ukFem1.96","usFem1.96",
  "auFFA2","caFFA2","ieFFA2","nzFFA2","ukFFA2","usFFA2")
```

```
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]
```

```
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv),type="spearman")
```

```
print(rc$r, digits = 4)
```

```
##      auFem1.96 caFem1.96 ieFem1.96 nzFem1.96 ukFem1.96 usFem1.96
## auFem1.96  1.000000  0.59480  0.328320  0.3448586  0.63599  0.69258
## caFem1.96  0.594805  1.00000  0.304315  0.3476462  0.66865  0.76703
## ieFem1.96  0.328320  0.30432  1.000000  0.2500908  0.36850  0.36428
```



```
## nzFem1.96 0.344859 0.34765 0.250091 1.0000000 0.42335 0.40745
## ukFem1.96 0.635994 0.66865 0.368505 0.4233473 1.00000 0.74383
## usFem1.96 0.692584 0.76703 0.364282 0.4074521 0.74383 1.00000
## auFFA2 0.160647 0.15928 0.051872 0.0738720 0.17565 0.11364
## caFFA2 0.048181 0.08797 -0.067830 0.1294658 0.18771 0.07829
## ieFFA2 0.001739 0.07150 0.055317 0.0009738 0.10494 0.11726
## nzFFA2 -0.121941 -0.14558 0.029093 -0.1452550 -0.13877 -0.13300
## ukFFA2 0.067666 0.08140 0.003407 -0.1331477 0.06906 0.04116
## usFFA2 0.078844 0.15382 -0.041847 0.0338865 0.11995 0.12185
## auFFA2 caFFA2 ieFFA2 nzFFA2 ukFFA2 usFFA2
## auFem1.96 0.16065 0.04818 0.0017394 -0.12194 0.067666 0.07884
## caFem1.96 0.15928 0.08797 0.0715041 -0.14558 0.081402 0.15382
## ieFem1.96 0.05187 -0.06783 0.0553172 0.02909 0.003407 -0.04185
## nzFem1.96 0.07387 0.12947 0.0009738 -0.14525 -0.133148 0.03389
## ukFem1.96 0.17565 0.18771 0.1049377 -0.13877 0.069063 0.11995
## usFem1.96 0.11364 0.07829 0.1172620 -0.13300 0.041158 0.12185
## auFFA2 1.00000 0.16695 0.0146271 0.10474 0.271605 0.30002
## caFFA2 0.16695 1.00000 0.0966638 0.11273 0.249714 0.19516
## ieFFA2 0.01463 0.09666 1.0000000 0.03238 0.181080 0.08202
## nzFFA2 0.10474 0.11273 0.0323819 1.00000 0.087132 0.02515
## ukFFA2 0.27160 0.24971 0.1810797 0.08713 1.000000 0.23157
## usFFA2 0.30002 0.19516 0.0820218 0.02515 0.231568 1.00000
```

```
print(rc$n, digits = 4)
```

```
## auFem1.96 caFem1.96 ieFem1.96 nzFem1.96 ukFem1.96 usFem1.96
## auFem1.96 300 298 190 236 300 300
## caFem1.96 298 309 191 236 307 309
## ieFem1.96 190 191 192 179 192 191
## nzFem1.96 236 236 179 237 237 236
## ukFem1.96 300 307 192 237 315 314
## usFem1.96 300 309 191 236 314 319
## auFFA2 295 303 190 235 304 307
## caFFA2 296 305 191 236 306 311
## ieFFA2 247 249 178 210 249 250
## nzFFA2 259 259 184 221 259 260
## ukFFA2 299 307 192 237 312 316
## usFFA2 300 309 191 236 314 319
## auFFA2 caFFA2 ieFFA2 nzFFA2 ukFFA2 usFFA2
## auFem1.96 295 296 247 259 299 300
## caFem1.96 303 305 249 259 307 309
## ieFem1.96 190 191 178 184 192 191
## nzFem1.96 235 236 210 221 237 236
## ukFem1.96 304 306 249 259 312 314
## usFem1.96 307 311 250 260 316 319
## auFFA2 310 307 248 258 308 310
## caFFA2 307 313 249 259 312 313
## ieFFA2 248 249 250 231 249 250
## nzFFA2 258 259 231 260 260 260
```

```
## ukFFA2      308      312      249      260      321      320
## usFFA2      310      313      250      260      320      327
```

```
print(rc$P, digits = 4)
```

```
##          auFem1.96      caFem1.96      ieFem1.96      nzFem1.96
## auFem1.96          NA 0.0000000000 0.0000037539 0.0000005406117
## caFem1.96 0.0000000000          NA 0.0000186836 0.00000004151005
## ieFem1.96 0.00000375392 0.00001868357          NA 0.00073451289423
## nzFem1.96 0.00000005406 0.00000004151 0.0007345129          NA
## ukFem1.96 0.00000000000 0.00000000000 0.0000001448 0.00000000001006
## usFem1.96 0.00000000000 0.00000000000 0.0000002212 0.00000000007471
## auFFA2      0.00568399384 0.00545591221 0.4772330115 0.25934541922057
## caFFA2      0.40885845834 0.12529568683 0.3511546918 0.04695562202866
## ieFFA2      0.97830178907 0.26098009077 0.4633232022 0.98880826510779
## nzFFA2      0.04996189832 0.01907730899 0.6950393339 0.03088226154784
## ukFFA2      0.24341416917 0.15478971618 0.9625912709 0.04055284780073
## usFFA2      0.17318655411 0.00674746994 0.5654336389 0.60448711558259
##          ukFem1.96      usFem1.96      auFFA2      caFFA2
## auFem1.96 0.00000000000000 0.00000000000000 0.00568399384 0.408858458
## caFem1.96 0.00000000000000 0.00000000000000 0.00545591221 0.125295687
## ieFem1.96 0.00000014478792 0.00000022123286 0.47723301145 0.351154692
## nzFem1.96 0.00000000001006 0.00000000007471 0.25934541922 0.046955622
## ukFem1.96          NA 0.00000000000000 0.00211279285 0.000968690
## usFem1.96 0.00000000000000          NA 0.04665891100 0.168468341
## auFFA2      0.00211279285057 0.04665891099841          NA 0.003346615
## caFFA2      0.00096869038882 0.16846834104408 0.00334661530          NA
## ieFFA2      0.09850968120683 0.06414434603081 0.81871585638 0.128204952
## nzFFA2      0.02553210168764 0.03204561361019 0.09319798521 0.070104445
## ukFFA2      0.22380956245151 0.46597503743335 0.00000130809 0.000008043
## usFFA2      0.03361054971086 0.02956194700199 0.00000007219 0.000515764
##          ieFFA2      nzFFA2      ukFFA2      usFFA2
## auFem1.96 0.978302 0.04996 0.243414169 0.17318655411
## caFem1.96 0.260980 0.01908 0.154789716 0.00674746994
## ieFem1.96 0.463323 0.69504 0.962591271 0.56543363895
## nzFem1.96 0.988808 0.03088 0.040552848 0.60448711558
## ukFem1.96 0.098510 0.02553 0.223809562 0.03361054971
## usFem1.96 0.064144 0.03205 0.465975037 0.02956194700
## auFFA2      0.818716 0.09320 0.000001308 0.00000007219
## caFFA2      0.128205 0.07010 0.000008043 0.00051576433
## ieFFA2          NA 0.62440 0.004147127 0.19616395828
## nzFFA2      0.624403          NA 0.161254930 0.68646692726
## ukFFA2      0.004147 0.16125          NA 0.00002874221
## usFFA2      0.196164 0.68647 0.000028742          NA
```

```
##12 proportion
```

```
FemaleProportionsAndFemale1AdvCols <-
```

```
c("auFem1.14", "caFem1.14", "ieFem1.14", "nzFem1.14", "ukFem1.14", "usFem1.14",
  "auFFA2", "caFFA2", "ieFFA2", "nzFFA2", "ukFFA2", "usFFA2")
```

```
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]
```

```
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv),type="spearman")
print(rc$r, digits = 4)
```

##	auFem1.14	caFem1.14	ieFem1.14	nzFem1.14	ukFem1.14	usFem1.14
## auFem1.14	1.00000	0.79905	0.63314	0.51807	0.76175	0.87400
## caFem1.14	0.79905	1.00000	0.62320	0.58260	0.82792	0.85472
## ieFem1.14	0.63314	0.62320	1.00000	0.42524	0.64369	0.70442
## nzFem1.14	0.51807	0.58260	0.42524	1.00000	0.55457	0.57239
## ukFem1.14	0.76175	0.82792	0.64369	0.55457	1.00000	0.84750
## usFem1.14	0.87400	0.85472	0.70442	0.57239	0.84750	1.00000
## auFFA2	0.23669	0.13853	0.11965	0.07070	0.12517	0.15539
## caFFA2	0.06463	0.07862	0.09735	0.03743	0.09361	0.06874
## ieFFA2	0.11953	0.16144	0.08145	0.09249	0.11859	0.12164
## nzFFA2	-0.12373	-0.15517	-0.11587	-0.08822	-0.13994	-0.14655
## ukFFA2	0.07562	0.10326	-0.04292	0.11474	0.08792	0.07924
## usFFA2	0.16923	0.14499	0.03820	0.06929	0.12342	0.14069
## auFFA2	0.23669	0.06463	0.11953	-0.12373	0.07562	0.16923
## caFFA2	0.13853	0.07862	0.16144	-0.15517	0.10326	0.14499
## ieFFA2	0.11965	0.09735	0.08145	-0.11587	-0.04292	0.03820
## nzFFA2	0.07070	0.03743	0.09249	-0.08822	0.11474	0.06929
## ukFFA2	0.12517	0.09361	0.11859	-0.13994	0.08792	0.12342
## usFFA2	0.15539	0.06874	0.12164	-0.14655	0.07924	0.14069
## auFFA2	1.00000	0.16695	0.01463	0.10474	0.27160	0.30002
## caFFA2	0.16695	1.00000	0.09666	0.11273	0.24971	0.19516
## ieFFA2	0.01463	0.09666	1.00000	0.03238	0.18108	0.08202
## nzFFA2	0.10474	0.11273	0.03238	1.00000	0.08713	0.02515
## ukFFA2	0.27160	0.24971	0.18108	0.08713	1.00000	0.23157
## usFFA2	0.30002	0.19516	0.08202	0.02515	0.23157	1.00000

```
print(rc$n, digits = 4)
```

##	auFem1.14	caFem1.14	ieFem1.14	nzFem1.14	ukFem1.14	usFem1.14
## auFem1.14	324	320	296	299	323	323
## caFem1.14	320	323	296	298	322	323
## ieFem1.14	296	296	296	284	296	296
## nzFem1.14	299	298	284	299	298	298
## ukFem1.14	323	322	296	298	325	325
## usFem1.14	323	323	296	298	325	327
## auFFA2	310	308	288	294	309	309
## caFFA2	312	312	290	294	313	313
## ieFFA2	250	250	250	247	250	250
## nzFFA2	260	259	253	258	260	260
## ukFFA2	318	319	294	296	320	320
## usFFA2	324	323	296	299	325	326
## auFFA2	310	312	250	260	318	324
## caFFA2	308	312	250	259	319	323
## ieFFA2	288	290	250	253	294	296
## nzFFA2	294	294	247	258	296	299

```
## ukFem1.14      309      313      250      260      320      325
## usFem1.14      309      313      250      260      320      326
## auFFA2         310      307      248      258      308      310
## caFFA2         307      313      249      259      312      313
## ieFFA2         248      249      250      231      249      250
## nzFFA2         258      259      231      260      260      260
## ukFFA2         308      312      249      260      321      320
## usFFA2         310      313      250      260      320      327
```

```
print(rc$P, digits = 4)
```

```
##              auFem1.14 caFem1.14              ieFem1.14              nzFem1.14
## auFem1.14      NA      0.000000 0.000000000000000000 0.000000000000000000
## caFem1.14 0.00000000      NA      0.000000000000000000 0.000000000000000000
## ieFem1.14 0.00000000 0.000000      NA      0.000000000000006706
## nzFem1.14 0.00000000 0.000000 0.000000000000006706      NA
## ukFem1.14 0.00000000 0.000000 0.000000000000000000 0.000000000000000000
## usFem1.14 0.00000000 0.000000 0.000000000000000000 0.000000000000000000
## auFFA2      0.00002547 0.014975 0.04245514004959805 0.22680032639041370
## caFFA2      0.25505896 0.165951 0.09801766531617728 0.52264093490778851
## ieFFA2      0.05913393 0.010573 0.19931690410320524 0.14724188078157452
## nzFFA2      0.04625196 0.012409 0.06576043139560728 0.15770833642793258
## ukFFA2      0.17857312 0.065472 0.46347069667843188 0.04858883561248861
## usFFA2      0.00224006 0.009068 0.51263347146662230 0.23228385808250573
##              ukFem1.14 usFem1.14              auFFA2              caFFA2              ieFFA2              nzFFA2
## auFem1.14      0.00000      0.00000 0.00002547128 0.255058965 0.059134 0.04625
## caFem1.14      0.00000      0.00000 0.01497480090 0.165951428 0.010573 0.01241
## ieFem1.14      0.00000      0.00000 0.04245514005 0.098017665 0.199317 0.06576
## nzFem1.14      0.00000      0.00000 0.22680032639 0.522640935 0.147242 0.15771
## ukFem1.14      NA      0.00000 0.02779850749 0.098319141 0.061163 0.02402
## usFem1.14      0.00000      NA      0.00620018031 0.225265535 0.054763 0.01805
## auFFA2      0.02780      0.00620      NA      0.003346615 0.818716 0.09320
## caFFA2      0.09832      0.22527 0.00334661530      NA      0.128205 0.07010
## ieFFA2      0.06116      0.05476 0.81871585638 0.128204952      NA      0.62440
## nzFFA2      0.02402      0.01805 0.09319798521 0.070104445 0.624403      NA
## ukFFA2      0.11648      0.15729 0.00000130809 0.000008043 0.004147 0.16125
## usFFA2      0.02608      0.01099 0.00000007219 0.000515764 0.196164 0.68647
##              ukFFA2              usFFA2
## auFem1.14 0.178573122 0.00224006453
## caFem1.14 0.065471702 0.00906817835
## ieFem1.14 0.463470697 0.51263347147
## nzFem1.14 0.048588836 0.23228385808
## ukFem1.14 0.116478797 0.02608315648
## usFem1.14 0.157287051 0.01098779362
## auFFA2      0.000001308 0.00000007219
## caFFA2      0.000008043 0.00051576433
## ieFFA2      0.004147127 0.19616395828
## nzFFA2      0.161254930 0.68646692726
## ukFFA2      NA      0.00002874221
## usFFA2      0.000028742      NA
```

```
#####  
#####
```

```
## RQ4/5: Are female first author citation advantages higher in fields with a  
greater increase in the proportion of females?
```

```
#####  
#####
```

```
##RQ4
```

```
FemaleProportionsAndFemale1AdvCols <-
```

```
c("auChg1", "caChg1", "ieChg1", "nzChg1", "ukChg1", "usChg1",  
  "auFFA1", "caFFA1", "ieFFA1", "nzFFA1", "ukFFA1", "usFFA1")
```

```
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]
```

```
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv), type="spearman")
```

```
print(rc$r, digits = 4)
```

```
##          auChg1    caChg1    ieChg1    nzChg1    ukChg1    usChg1    auFFA1  
## auChg1  1.00000  0.2373897  0.0744127  0.12986  0.16680  0.35885  0.05731  
## caChg1  0.23739  1.0000000 -0.0009398  0.21148  0.25499  0.47292 -0.04904  
## ieChg1  0.07441 -0.0009398  1.0000000  0.17488  0.06888  0.09424 -0.06038  
## nzChg1  0.12986  0.2114842  0.1748787  1.00000  0.22098  0.25952 -0.01738  
## ukChg1  0.16680  0.2549899  0.0688783  0.22098  1.00000  0.30462 -0.07398  
## usChg1  0.35885  0.4729222  0.0942409  0.25952  0.30462  1.00000  0.10521  
## auFFA1  0.05731 -0.0490434 -0.0603842 -0.01738 -0.07398  0.10521  1.00000  
## caFFA1  0.04803  0.0185686  0.0539145 -0.07807 -0.02052  0.01231  0.12006  
## ieFFA1  0.18960  0.1558235  0.0311365  0.02116  0.12410  0.20045  0.03312  
## nzFFA1 -0.10753 -0.0814353 -0.0530569  0.05792 -0.04715 -0.13663  0.08169  
## ukFFA1  0.13382  0.0655011 -0.0828170  0.13026  0.14258  0.15058  0.22886  
## usFFA1  0.08075 -0.0423287  0.0381980  0.08804  0.02291  0.05251  0.25715  
##          caFFA1    ieFFA1    nzFFA1    ukFFA1    usFFA1  
## auChg1  0.04803  0.18960 -0.10753  0.13382  0.08075  
## caChg1  0.01857  0.15582 -0.08144  0.06550 -0.04233  
## ieChg1  0.05391  0.03114 -0.05306 -0.08282  0.03820  
## nzChg1 -0.07807  0.02116  0.05792  0.13026  0.08804  
## ukChg1 -0.02052  0.12410 -0.04715  0.14258  0.02291  
## usChg1  0.01231  0.20045 -0.13663  0.15058  0.05251  
## auFFA1  0.12006  0.03312  0.08169  0.22886  0.25715  
## caFFA1  1.00000  0.12755  0.11496  0.17509  0.21610  
## ieFFA1  0.12755  1.00000 -0.10632  0.18977  0.14200  
## nzFFA1  0.11496 -0.10632  1.00000  0.05217 -0.02269  
## ukFFA1  0.17509  0.18977  0.05217  1.00000  0.27031  
## usFFA1  0.21610  0.14200 -0.02269  0.27031  1.00000
```

```
print(rc$n, digits = 4)
```

```
##          auChg1 caChg1 ieChg1 nzChg1 ukChg1 usChg1 auFFA1 caFFA1 ieFFA1  
## auChg1    299    296    187    232    299    299    294    294    221  
## caChg1    296    308    187    232    306    308    302    301    221  
## ieChg1    187    187    187    175    187    187    186    187    168  
## nzChg1    232    232    175    232    232    232    231    232    194  
## ukChg1    299    306    187    232    314    314    302    303    222
```

```
## usChg1      299      308      187      232      314      319      306      308      222
## auFFA1      294      302      186      231      302      306      308      304      220
## caFFA1      294      301      187      232      303      308      304      310      221
## ieFFA1      221      221      168      194      222      222      220      221      222
## nzFFA1      239      238      174      211      239      239      237      238      202
## ukFFA1      298      306      187      231      310      315      306      308      222
## usFFA1      299      307      187      232      313      318      308      310      222
##           nzFFA1 ukFFA1 usFFA1
## auChg1      239      298      299
## caChg1      238      306      307
## ieChg1      174      187      187
## nzChg1      211      231      232
## ukChg1      239      310      313
## usChg1      239      315      318
## auFFA1      237      306      308
## caFFA1      238      308      310
## ieFFA1      202      222      222
## nzFFA1      239      239      239
## ukFFA1      239      319      318
## usFFA1      239      318      325
```

```
print(rc$P, digits = 4)
```

```
##           auChg1      caChg1      ieChg1      nzChg1      ukChg1
## auChg1           NA 0.000036904 0.31146 0.04819018 0.00382335643
## caChg1 0.0000369035618           NA 0.98981 0.00119293 0.00000626820
## ieChg1 0.3114617779860 0.989814636           NA 0.02062851 0.34891575389
## nzChg1 0.0481901828738 0.001192932 0.02063           NA 0.00069976943
## ukChg1 0.0038233564330 0.000006268 0.34892 0.00069977           NA
## usChg1 0.0000000001624 0.000000000 0.19951 0.00006324 0.00000003634
## auFFA1 0.3274039755193 0.395736865 0.41294 0.79270553 0.19979845501
## caFFA1 0.4118799059367 0.748331693 0.46364 0.23620542 0.72200759144
## ieFFA1 0.0046798401325 0.020475416 0.68867 0.76961127 0.06491846893
## nzFFA1 0.0972342129680 0.210646887 0.48686 0.40260367 0.46814101478
## ukFFA1 0.0208450449286 0.253312890 0.25981 0.04798722 0.01196748955
## usFFA1 0.1636819373277 0.459928481 0.60373 0.18144005 0.68636136385
##           usChg1      auFFA1      caFFA1      ieFFA1      nzFFA1      ukFFA1
## auChg1 0.0000000001624 0.327403976 0.4118799 0.004680 0.09723 0.0208450449
## caChg1 0.0000000000000 0.395736865 0.7483317 0.020475 0.21065 0.2533128901
## ieChg1 0.1995128067301 0.412942735 0.4636444 0.688671 0.48686 0.2598064674
## nzChg1 0.0000632440320 0.792705532 0.2362054 0.769611 0.40260 0.0479872212
## ukChg1 0.0000000363434 0.199798455 0.7220076 0.064918 0.46814 0.0119674895
## usChg1           NA 0.066072459 0.8295883 0.002698 0.03477 0.0074248104
## auFFA1 0.0660724586278           NA 0.0364079 0.625181 0.21020 0.0000532733
## caFFA1 0.8295882591168 0.036407922           NA 0.058345 0.07672 0.0020406291
## ieFFA1 0.0026975249255 0.625181459 0.0583449           NA 0.13206 0.0045480163
## nzFFA1 0.0347671086075 0.210204391 0.0767249 0.132057           NA 0.4220605871
## ukFFA1 0.0074248103762 0.000053273 0.0020406 0.004548 0.42206           NA
## usFFA1 0.3506206497341 0.000004839 0.0001256 0.034467 0.72707 0.0000009942
##           usFFA1
```

```
## auChg1 0.1636819373
## caChg1 0.4599284806
## ieChg1 0.6037348156
## nzChg1 0.1814400495
## ukChg1 0.6863613638
## usChg1 0.3506206497
## auFFA1 0.0000048390
## caFFA1 0.0001256043
## ieFFA1 0.0344666927
## nzFFA1 0.7270708132
## ukFFA1 0.0000009942
## usFFA1 NA
```

```
##RQ5
```

```
FemaleProportionsAndFemale1AdvCols <-
```

```
c("auChg1", "caChg1", "ieChg1", "nzChg1", "ukChg1", "usChg1",
  "auFFA2", "caFFA2", "ieFFA2", "nzFFA2", "ukFFA2", "usFFA2")
```

```
FemaleProportionsAndFemale1Adv <- AllData[FemaleProportionsAndFemale1AdvCols]
```

```
rc <- rcorr(as.matrix(FemaleProportionsAndFemale1Adv), type="spearman")
```

```
print(rc$r, digits = 4)
```

```
##      auChg1    caChg1    ieChg1    nzChg1    ukChg1    usChg1
## auChg1  1.00000  0.2373897  0.0744127  0.129862  0.16680  0.35885
## caChg1  0.23739  1.0000000 -0.0009398  0.211484  0.25499  0.47292
## ieChg1  0.07441 -0.0009398  1.0000000  0.174879  0.06888  0.09424
## nzChg1  0.12986  0.2114842  0.1748787  1.0000000  0.22098  0.25952
## ukChg1  0.16680  0.2549899  0.0688783  0.220979  1.00000  0.30462
## usChg1  0.35885  0.4729222  0.0942409  0.259525  0.30462  1.00000
## auFFA2  0.06756 -0.0811310 -0.0092074 -0.023448 -0.08663  0.05529
## caFFA2  0.03616  0.0265104  0.1115929 -0.065511 -0.04533 -0.02056
## ieFFA2  0.13704  0.1058753  0.0596306 -0.009381  0.06064  0.11941
## nzFFA2 -0.06988 -0.0551710 -0.0005694  0.019136 -0.02703 -0.13476
## ukFFA2  0.08768  0.0493828  0.0220218  0.109169  0.09798  0.12805
## usFFA2  0.04423 -0.0304138  0.0453202  0.050230 -0.04722  0.01415
##      auFFA2    caFFA2    ieFFA2    nzFFA2    ukFFA2    usFFA2
## auChg1  0.067563  0.03616  0.137035 -0.0698805  0.08768  0.04423
## caChg1 -0.081131  0.02651  0.105875 -0.0551710  0.04938 -0.03041
## ieChg1 -0.009207  0.11159  0.059631 -0.0005694  0.02202  0.04532
## nzChg1 -0.023448 -0.06551 -0.009381  0.0191355  0.10917  0.05023
## ukChg1 -0.086634 -0.04533  0.060642 -0.0270263  0.09798 -0.04722
## usChg1  0.055287 -0.02056  0.119415 -0.1347617  0.12805  0.01415
## auFFA2  1.000000  0.16695  0.014627  0.1047362  0.27160  0.30002
## caFFA2  0.166954  1.00000  0.096664  0.1127310  0.24971  0.19516
## ieFFA2  0.014627  0.09666  1.000000  0.0323819  0.18108  0.08202
## nzFFA2  0.104736  0.11273  0.032382  1.0000000  0.08713  0.02515
## ukFFA2  0.271605  0.24971  0.181080  0.0871324  1.00000  0.23157
## usFFA2  0.300020  0.19516  0.082022  0.0251508  0.23157  1.00000
```

```
print(rc$n, digits = 4)
```



```
##          auChg1 caChg1 ieChg1 nzChg1 ukChg1 usChg1 auFFA2 caFFA2 ieFFA2
## auChg1      299    296    187    232    299    299    295    296    247
## caChg1      296    308    187    232    306    308    302    304    249
## ieChg1      187    187    187    175    187    187    187    187    178
## nzChg1      232    232    175    232    232    232    232    232    209
## ukChg1      299    306    187    232    314    314    304    306    249
## usChg1      299    308    187    232    314    319    307    311    250
## auFFA2      295    302    187    232    304    307    310    307    248
## caFFA2      296    304    187    232    306    311    307    313    249
## ieFFA2      247    249    178    209    249    250    248    249    250
## nzFFA2      259    258    182    221    259    260    258    259    231
## ukFFA2      298    306    187    232    311    316    308    312    249
## usFFA2      299    308    187    232    314    319    310    313    250
##          nzFFA2 ukFFA2 usFFA2
## auChg1      259    298    299
## caChg1      258    306    308
## ieChg1      182    187    187
## nzChg1      221    232    232
## ukChg1      259    311    314
## usChg1      260    316    319
## auFFA2      258    308    310
## caFFA2      259    312    313
## ieFFA2      231    249    250
## nzFFA2      260    260    260
## ukFFA2      260    321    320
## usFFA2      260    320    327
```

```
print(rc$P, digits = 4)
```

```
##          auChg1      caChg1 ieChg1      nzChg1      ukChg1
## auChg1          NA 0.000036904 0.31146 0.04819018 0.00382335643
## caChg1 0.0000369035618          NA 0.98981 0.00119293 0.00000626820
## ieChg1 0.3114617779860 0.989814636          NA 0.02062851 0.34891575389
## nzChg1 0.0481901828738 0.001192932 0.02063          NA 0.00069976943
## ukChg1 0.0038233564330 0.000006268 0.34892 0.00069977          NA
## usChg1 0.0000000001624 0.000000000 0.19951 0.00006324 0.00000003634
## auFFA2 0.2473420954220 0.159611481 0.90047 0.72238687 0.13177849268
## caFFA2 0.5354730695818 0.645228693 0.12838 0.32046066 0.42941786698
## ieFFA2 0.0313250794744 0.095521271 0.42914 0.89275952 0.34060127459
## nzFFA2 0.2624791638697 0.377480924 0.99391 0.77726685 0.66507072858
## ukFFA2 0.1310012469133 0.389327871 0.76482 0.09715770 0.08450341164
## usFFA2 0.4460233569350 0.594924944 0.53796 0.44640028 0.40432596621
##          usChg1      auFFA2      caFFA2 ieFFA2 nzFFA2
## auChg1 0.0000000001624 0.24734209542 0.535473070 0.031325 0.26248
## caChg1 0.0000000000000 0.15961148072 0.645228693 0.095521 0.37748
## ieChg1 0.1995128067301 0.90047000002 0.128377701 0.429137 0.99391
## nzChg1 0.0000632440320 0.72238686667 0.320460658 0.892760 0.77727
## ukChg1 0.0000000363434 0.13177849268 0.429417867 0.340601 0.66507
## usChg1          NA 0.33429332333 0.718012618 0.059375 0.02982
## auFFA2 0.334293323272          NA 0.003346615 0.818716 0.09320
```



```

## caFFA2 0.7180126180858 0.00334661530 NA 0.128205 0.07010
## ieFFA2 0.0593754652809 0.81871585638 0.128204952 NA 0.62440
## nzFFA2 0.0298243399742 0.09319798521 0.070104445 0.624403 NA
## ukFFA2 0.0228115992736 0.00000130809 0.000008043 0.004147 0.16125
## usFFA2 0.8011876104252 0.00000007219 0.000515764 0.196164 0.68647
##          ukFFA2          usFFA2
## auChg1 0.131001247 0.44602335694
## caChg1 0.389327871 0.59492494448
## ieChg1 0.764817943 0.53795713321
## nzChg1 0.097157699 0.44640028087
## ukChg1 0.084503412 0.40432596621
## usChg1 0.022811599 0.80118761043
## auFFA2 0.000001308 0.00000007219
## caFFA2 0.000008043 0.00051576433
## ieFFA2 0.004147127 0.19616395828
## nzFFA2 0.161254930 0.68646692726
## ukFFA2          NA 0.00002874221
## usFFA2 0.000028742          NA

#Basic stats
SampleSizeCols <-
c("au1CtyMFto14", "ca1CtyMFto14", "ie1CtyMFto14", "nz1CtyMFto14", "uk1CtyMFto14",
  "us1CtyMFto14")
SampleSizes <- AllData[SampleSizeCols]
colSums(SampleSizes)

## au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14 uk1CtyMFto14
##          368749          501306          42154          63198          924908
## us1CtyMFto14
##          4520489

colSums(SampleSizes != 0)

## au1CtyMFto14 ca1CtyMFto14 ie1CtyMFto14 nz1CtyMFto14 uk1CtyMFto14
##          330          328          321          324          329
## us1CtyMFto14
##          331

```