Examples for the **corrgram** package

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1 Abstract


2 Setup

Load the package.

```r
library("corrgram")
```

Figure 2

```r
vars2 <- c("Assists","Atbat","Errors","Hits","Homer","logSal",
            "Putouts","RBI","Runs","Walks","Years")
corrgram(baseball[,vars2], order=TRUE,
         main="Baseball data PC2/PC1 order",
         lower.panel=panel.shade, upper.panel=panel.pie,
         diag.panel=panel.minmax, text.panel=panel.txt)
```
Figure 3

```r
baseball.cor <- cor(baseball[,vars2], use=pair)
baseball.eig <- eigen(baseball.cor)$vectors[,1:2]
e1 <- baseball.eig[,1]
e2 <- baseball.eig[,2]
plot(e1,e2,col=white, xlim=range(e1,e2), ylim=range(e1,e2))
text(e1,e2, rownames(baseball.cor), cex=1)
arrows(0, 0, e1, e2, cex=0.5, col="red", length=0.1)
```

Examples for the corrgram package
Figure 4a, 4b

```
corrgram(baseball[,vars2], main="Baseball data (alphabetic order)")
```
Baseball data (alphabetic order)

corrgram(baseball[,vars2], order=TRUE, main="Baseball data (PC order)", panel=panel.shade, text.panel=panel.txt)
Figure 5

corrgram(baseball, order=TRUE, main="Baseball data (PC order)")
Figure 6. Arrangement is slightly different from Friendly.

corrgram(auto, order=TRUE, main="Auto data (PC order)")
Figure 7.

```r
rinv <- function(r){
    # r is a correlation matrix
    # calculate r inverse and scale to correlation matrix
    # Derived from Michael Friendlys SAS code

    ri <- solve(r)
    s <- diag(ri)
    s <- diag(sqrt(1/s))
    ri <- s %*% ri %*% s
    n <- nrow(ri)
}
```

Examples for the corrgram package
ri <- ri * (2*rep(1,n) - matrix(1, n, n))
diag(ri) <- 1  # Should already be 1, but could be 1 + epsilon
colnames(ri) <- rownames(ri) <- rownames(r)
return(ri)
}


cb <- cor(baseball[,vars7], use="pair")
corrgram(-rinv(cb), main=expression(paste("Baseball data \( R^{-1}\)")))
require(Matrix) # For block diagonal function

## Loading required package: Matrix

partial <- function(r, xvar){
  # r is a correlation matrix
  # Calculate partial correlation of y|x
  yvar <- setdiff(colnames(r), xvar)
  ri <- r[yvar,yvar] - r[yvar,xvar] %*% solve(r[xvar,xvar]) %*% r[xvar,yvar]
  s <- diag(ri)
  s <- diag(sqrt(1/s))
  ri <- s %*% ri %*% s
  ri <- as.matrix(bdiag(ri, r[xvar, xvar]))
  diag(ri) <- 1 # Should already be 1, but could be 1 + epsilon
  colnames(ri) <- rownames(ri) <- c(yvar, xvar)
  return(ri)
}

vars8a <- c("Gratio", "Rep78", "Rep77", "Hroom", "Trunk", "Rseat",
            "Length", "Weight", "Displa", "Turn")
vars8b <- c("MPG", "Price")
vars8 <- c(vars8a, vars8b)
auto.cor <- cor(auto[, vars8], use="pair")
auto.par <- partial(auto.cor, vars8b)
corrgram(auto.par, lower.panel=panel.pie, upper.panel=panel.pie,
         main="Auto data, partialing out Price, MPG")

Examples for the corrgram package
Figure 11

corrgram(baseball[,vars2], order=TRUE,
  main="Baseball correlation ellipses",
  panel=panel.ellipse,
  text.panel=panel.txt, diag.panel=panel.minmax)
3 Appendix

Session information:

- R version 3.1.2 (2014-10-31), x86_64-w64-mingw32
- Base packages: base, datasets, grDevices, graphics, methods, stats, utils
- Other packages: Matrix 1.1-4, corrgram 1.7, knitr 1.8
- Loaded via a namespace (and not attached): MASS 7.3-35, TSP 1.0-9, cluster 1.15.3, colorspace 1.2-4, evaluate 0.5.5, formatR 1.0, gclus 1.3.1, grid 3.1.2, highr 0.4, lattice 0.20-29, seriation 1.0-14, stringr 0.6.2, tools 3.1.2