> Ecology2 <- read\_excel("Documents/Accunique/5-Principal Component Analysis-Ecology-600/Ecology2.xls")

New names:

\* `` -> ...1

> View(Ecology2)

> library(dplyr)

> df <- select(Ecology2, -65, -1)

> head(df)

# A tibble: 6 x 63

`1` `2` `3` `4` `5` `6` `7` `8` `9` `10` `11` `12` `13` `14` `15` `16` `17` `18` `19` `20`

<dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>

1 0 0 0 0 30 0 0 0 1 0 40 0 0 0 62 0 13 0 0 0

2 0 0 0 0 20 0 0 0 0 0 105 0 0 0 70 0 18 10 0 0

3 0 0 0 0 0 0 0 0 0 0 20 0 0 0 58 0 24 5 0 0

4 0 0 0 0 40 0 0 0 0 2 70 0 21 0 7 0 23 0 0 0

5 0 3 0 0 0 0 0 1 0 0 35 0 0 0 40 0 1 5 0 0

6 12 0 0 0 0 0 0 0 0 0 35 0 0 0 91 0 7 5 0 0

# … with 43 more variables: `21` <dbl>, `22` <dbl>, `23` <dbl>, `24` <dbl>, `25` <dbl>, `26` <dbl>, `27` <dbl>,

# `28` <dbl>, `29` <dbl>, `30` <dbl>, `31` <dbl>, `32` <dbl>, `33` <dbl>, `34` <dbl>, `35` <dbl>, `36` <dbl>, `37` <dbl>,

# `38` <dbl>, `39` <dbl>, `40` <dbl>, `41` <dbl>, `42` <dbl>, `43` <dbl>, `44` <dbl>, `45` <dbl>, `46` <dbl>, `47` <dbl>,

# `48` <dbl>, `49` <dbl>, `50` <dbl>, `51` <dbl>, `52` <dbl>, `53` <dbl>, `54` <dbl>, `55` <dbl>, `56` <dbl>, `57` <dbl>,

# `58` <dbl>, `59` <dbl>, `60` <dbl>, `61` <dbl>, `62` <dbl>, `63` <dbl>

>

> df <- as.data.frame(df)

> row.names(df) <- c("p","q","r","s","v","b","d","f","g","h","i","j","k","l","m","n","o","t","u","c","w","x","a","e")

> res.pca <- PCA(df, graph = FALSE)

> library(FactoMineR)

> library(factoextra)

Need help getting started? Try the R Graphics Cookbok: https://r-graphics.org

Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa

> res.pca <- PCA(df, graph = FALSE)

> print(res.pca)

\*\*Results for the Principal Component Analysis (PCA)\*\*

The analysis was performed on 24 individuals, described by 63 variables

\*The results are available in the following objects:

name description

1 "$eig" "eigenvalues"

2 "$var" "results for the variables"

3 "$var$coord" "coord. for the variables"

4 "$var$cor" "correlations variables - dimensions"

5 "$var$cos2" "cos2 for the variables"

6 "$var$contrib" "contributions of the variables"

7 "$ind" "results for the individuals"

8 "$ind$coord" "coord. for the individuals"

9 "$ind$cos2" "cos2 for the individuals"

10 "$ind$contrib" "contributions of the individuals"

11 "$call" "summary statistics"

12 "$call$centre" "mean of the variables"

13 "$call$ecart.type" "standard error of the variables"

14 "$call$row.w" "weights for the individuals"

15 "$call$col.w" "weights for the variables"

> eig.val

eigenvalue variance.percent cumulative.variance.percent

Dim.1 6.7731057 10.7509615 10.75096

Dim.2 5.7813107 9.1766836 19.92765

Dim.3 5.2054358 8.2625965 28.19024

Dim.4 4.7874354 7.5991038 35.78935

Dim.5 4.3652397 6.9289519 42.71830

Dim.6 4.2058654 6.6759768 49.39427

Dim.7 3.6214383 5.7483148 55.14259

Dim.8 3.3487369 5.3154553 60.45804

Dim.9 3.1433091 4.9893795 65.44742

Dim.10 2.9544619 4.6896221 70.13705

Dim.11 2.6387804 4.1885403 74.32559

Dim.12 2.5143120 3.9909714 78.31656

Dim.13 2.3359972 3.7079320 82.02449

Dim.14 2.0896908 3.3169695 85.34146

Dim.15 1.8033148 2.8624044 88.20386

Dim.16 1.7411739 2.7637680 90.96763

Dim.17 1.4519963 2.3047560 93.27239

Dim.18 1.3207094 2.0963641 95.36875

Dim.19 1.0164668 1.6134394 96.98219

Dim.20 0.7900461 1.2540414 98.23623

Dim.21 0.4685264 0.7436927 98.97992

Dim.22 0.4143086 0.6576327 99.63756

Dim.23 0.2283387 0.3624423 100.00000

> fviz\_pca\_ind(res.pca, geom\_ind = "point", col.ind = Ecology2$Label, palette = c("black","black","black"), addEllipse = T, ellipse.type ="confidence", ellipse.level = 0.95, legend.title = "groups", pointsize = 3)+

+ labs(title = "PCA", x = "PCA1", y ="PC2") +

+ theme\_void()