Group 4: Urban Stream Syndrome

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A correlation matrix in R is a table showing correlation coefficients between many variables. Each cell in the table shows the correlation between two variables. The value is between -1 and 1:

+1: Perfect positive correlation

0: No correlation

–1: Perfect negative correlation

Hypotheses

Data Set

```
group4.csv <- "/home/mwl04747/RTricks/00_Project_Group_Demos/Group4_FakeData.csv"
prado = read.csv(group4.csv)
head(prado)
```

```
##   SONDE    Site.ID start.end     TIME Temp_deg_C pH_units ORP_mV SpCond_uS.cm
## 1    NA downstream     start 14:58:00      22.80    94310  132.7        554.6
## 2    NA downstream       end 15:00:00      22.73    94030  132.6        555.0
## 3    NA   upstream     start 15:08:00      22.76    93650  132.5        552.8
## 4    NA   upstream       end 15:10:00      22.74    93880  132.7        552.3
## 5    NA                                       NA       NA     NA           NA
## 6    NA                                       NA       NA     NA           NA
##   HDO_mg.l HDO_.Sat Turb_FNU Chl_ug.l Depth_m CablePower_V E..COLI...COLIFORM
## 1     7.99     95.5     0.16     0.14    0.00         0.01                 NA
## 2     7.99     95.4     0.08     0.14    0.02         0.01                 NA
## 3     8.28     98.9     1.36    -0.16    0.10         0.01                 NA
## 4     8.28     98.9     0.98    -0.17    0.10         0.01                 NA
## 5       NA       NA       NA       NA      NA           NA                 NA
## 6       NA       NA       NA       NA      NA           NA                 NA
##   EC.C.Sample.ID Dilution..sample.DI.  Site.ID.1 Yellow...large.wells.
## 1         Down 1                1:10 downstream                    48
## 2          Down 2                none downstream                    48
## 3          Down 3                1:10 downstream                    48
## 4          Down 4                none downstream                    48
## 5            Up 1                1:10   upstream                    48
## 6           Up 2                 none   upstream     47/47(1 unfilled)
##   Yellow...small.wells. Fluorescence..large.wells. Fluorescence..small.wells.
## 1                    35                         6                         1
## 2                    48                        29                         8
## 3                    31                        10                         1
## 4                    48                        11                        24
```

```
## 5                   24                          3                          0
## 6                   48                         36                          5
##   Total.Coliform.MPN E.Coli.MPN                 Notes NITRATES
## 1              549.3       7.4                              NA
## 2             1001.2      54.5                              NA
## 3              456.9      12.1                              NA
## 4             1011.2      40.2                              NA
## 5              328.8       3.1                              NA
## 6                ***      69.7 1 large well unfilled       NA
##   NITRATES.Sample.ID  Site.ID.2 Result..mg.L.NO3.. Notes.1
## 1              Up 1   upstream               6.04
## 2              Up 2   upstream               5.96
## 3              Up 3   upstream               5.86
## 4            Down 1 downstream               3.74
## 5            Down 2 downstream               3.98
## 6            Down 3 downstream               3.77
```

```
prado_clean = prado[,c(5:11)]
head(prado_clean)
```

```
##   Temp_deg_C pH_units ORP_mV SpCond_uS.cm HDO_mg.l HDO_.Sat Turb_FNU
## 1      22.80    94310  132.7        554.6     7.99     95.5     0.16
## 2      22.73    94030  132.6        555.0     7.99     95.4     0.08
## 3      22.76    93650  132.5        552.8     8.28     98.9     1.36
## 4      22.74    93880  132.7        552.3     8.28     98.9     0.98
## 5         NA       NA     NA           NA       NA       NA       NA
## 6         NA       NA     NA           NA       NA       NA       NA
```

```
res <- cor(prado_clean)
round(res, 2)
```

```
##              Temp_deg_C pH_units ORP_mV SpCond_uS.cm HDO_mg.l HDO_.Sat Turb_FNU
## Temp_deg_C            1       NA     NA           NA       NA       NA       NA
## pH_units             NA        1     NA           NA       NA       NA       NA
## ORP_mV               NA       NA      1           NA       NA       NA       NA
## SpCond_uS.cm         NA       NA     NA            1       NA       NA       NA
## HDO_mg.l             NA       NA     NA           NA        1       NA       NA
## HDO_.Sat             NA       NA     NA           NA       NA        1       NA
## Turb_FNU             NA       NA     NA           NA       NA       NA        1
```

Summary Stats

Hypothesis Tests

Plots