Introduction to R for Epidemiologists

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# Conditional formatting

## Example in rmarkdown using pander

* Useful for pandoc/markdown documents
* Only useful for bold/italicized formatting
* Can be converted to MS word
* Updated 2/20/15

### Custom highlighting

# Load and organize data
load("tab\_diab.RData")
tab\_diab <- select(tab\_diab, 1 , 7, 10)
tab\_diab[, "Meandiff\_Pval"] <- round(tab\_diab[, "Meandiff\_Pval"], 3)

# Create sequence of even rows
seqs1 <- seq(2, nrow(tab\_diab), by = 2)
seqs1

## [1] 2 4

# Add bold to rows
emphasize.strong.rows(seqs1)
# Show table
pander(tab\_diab)

|  |  |  |
| --- | --- | --- |
| Variable | Meandiff | Meandiff\_Pval |
| chol | 25.21 | 0.002 |
| **hdl** | **-5.893** | **0.015** |
| age | 13.74 | 0 |
| **height** | **0.2186** | **0.691** |
| weight | 18.11 | 0.002 |

# Find row/col entries of significance
wh1 <- which(tab\_diab < 0.05 & tab\_diab >= 0, arr.ind = T)
wh1

## row col
## [1,] 1 3
## [2,] 2 3
## [3,] 3 3
## [4,] 5 3

# Add bold
emphasize.strong.cells(wh1)
pander(tab\_diab)

|  |  |  |
| --- | --- | --- |
| Variable | Meandiff | Meandiff\_Pval |
| chol | 25.21 | **0.002** |
| hdl | -5.893 | **0.015** |
| age | 13.74 | **0** |
| height | 0.2186 | 0.691 |
| weight | 18.11 | **0.002** |

# Add italicized
emphasize.cells(wh1)
pander(tab\_diab)

|  |  |  |
| --- | --- | --- |
| Variable | Meandiff | Meandiff\_Pval |
| chol | 25.21 | *0.002* |
| hdl | -5.893 | *0.015* |
| age | 13.74 | *0* |
| height | 0.2186 | 0.691 |
| weight | 18.11 | *0.002* |

### Better formatting for R output

# Run standard linear model
glm1 <- lm(Ozone ~ Temp, data = airquality)
# Nice markdown output
pander(glm1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Estimate | Std. Error | t value | Pr(>|t|) |
| **Temp** | 2.429 | 0.2331 | 10.42 | 2.932e-18 |
| **(Intercept)** | -147 | 18.29 | -8.038 | 9.367e-13 |

Fitting linear model: Ozone ~ Temp

pander(summary(glm1))

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Estimate | Std. Error | t value | Pr(>|t|) |
| **Temp** | 2.429 | 0.2331 | 10.42 | 2.932e-18 |
| **(Intercept)** | -147 | 18.29 | -8.038 | 9.367e-13 |

|  |  |  |  |
| --- | --- | --- | --- |
| Observations | Residual Std. Error | $R^{2}$ | Adjusted $R^{2}$ |
| 116 | 23.71 | 0.4877 | 0.4832 |

Fitting linear model: Ozone ~ Temp

### Add significance stars

# Resave output
tab\_diab2 <- tab\_diab
# Add stars to pvalue
tab\_diab2[, "Meandiff\_Pval"] <- add.significance.stars(tab\_diab[, "Meandiff\_Pval"])
pander(tab\_diab2)

|  |  |  |
| --- | --- | --- |
| Variable | Meandiff | Meandiff\_Pval |
| chol | 25.21 | *0.002* \* \* |
| hdl | -5.893 | *0.015* \* |
| age | 13.74 | *0* \* \* \* |
| height | 0.2186 | *0.691* |
| weight | 18.11 | *0.002* \* \* |

## Example in html using htmlTable

* Uses html formatting
* Can control row/column shading
* Updated 4/21/15
* Does **not** work with MS word
* specify results = "asis"

### Row shading

# Get alternating row color shading
cols <- rep(c("white", "grey"), length = nrow(tab\_diab))
# Get html table
h1 <- htmlTable(tab\_diab, col.rgroup = cols)
h1

Variable

Meandiff

Meandiff\_Pval

1

chol

25.2139817629179

0.002

2

hdl

-5.89295845997974

0.015

3

age

13.7393939393939

0

4

height

0.218571280024946

0.691

5

weight

18.1088341037494

0.002

### Reformat pvalues

tab\_diab[, 3] <- txtPval(tab\_diab[, 3])
h1 <- htmlTable(tab\_diab, col.rgroup = cols)
h1

Variable

Meandiff

Meandiff\_Pval

1

chol

25.2139817629179

0.002

2

hdl

-5.89295845997974

0.015

3

age

13.7393939393939

< 0.0001

4

height

0.218571280024946

0.69

5

weight

18.1088341037494

0.002

### Add more formatting

# Define text colors for each cell
cols2 <- matrix(rep(c("color: #FF00FF;", "color: #6666FF;"),
 length = nrow(tab\_diab) \*3), ncol = 3, byrow = F)
h1 <- htmlTable(tab\_diab, css.cell = cols2)
h1

Variable

Meandiff

Meandiff\_Pval

1

chol

25.2139817629179

0.002

2

hdl

-5.89295845997974

0.015

3

age

13.7393939393939

< 0.0001

4

height

0.218571280024946

0.69

5

weight

18.1088341037494

0.002

# Define cgroups
# Add alignment
# Add captions
h1 <- htmlTable(tab\_diab, cgroup = c("name", "results"), n.cgroup = c(1, 2),
 align.cgroup = "l", align = c("c", "l", "l"), col.columns = c("grey",
 "white", "white"), caption = "Table 1. tab\_diab", pos.caption = "bottom")
h1

name

results

Variable

Meandiff

Meandiff\_Pval

1

chol

25.2139817629179

0.002

2

hdl

-5.89295845997974

0.015

3

age

13.7393939393939

< 0.0001

4

height

0.218571280024946

0.69

5

weight

18.1088341037494

0.002

Table 1. tab\_diab

## Example in Word using ReporteRs

* Does not work with knitr
* Creates MS word file
* Adds objects to file, including formatted tables

# Create table
tabdiabFT <- FlexTable(tab\_diab)
# Modify cell properties
tabdiabFT[seq(2, nrow(tab\_diab), by = 2), ] <- cellProperties(background.color = "grey")

# Define output filename
doc.filename = "example\_table.docx"
# Define docx
doc = docx( )
# Add table
doc = addFlexTable( doc, tabdiabFT )
# Write file
writeDoc( doc, file = doc.filename )