Day 1 - File 4

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Let’s make some other cool tables. For the exercises below, you will be exploring these other packages:

* **tableone**
* **table1**
* **arsenal**

## Try out a cool package with the **table1** package

This package makes HTML tables.

Here is the syntax code for creating a table of summary statistics for the variables of diameter, height and length by sex for the abalone dataset.

library(table1)  
table1(~diameter + height + length | sex,  
 data=abalone)

## [1] "<table class=\"Rtable1\">\n<thead>\n<tr>\n<th class='rowlabel firstrow lastrow'></th>\n<th class='firstrow lastrow'><span class='stratlabel'>F<br><span class='stratn'>(N=1307)</span></span></th>\n<th class='firstrow lastrow'><span class='stratlabel'>I<br><span class='stratn'>(N=1342)</span></span></th>\n<th class='firstrow lastrow'><span class='stratlabel'>M<br><span class='stratn'>(N=1528)</span></span></th>\n<th class='firstrow lastrow'><span class='stratlabel'>Overall<br><span class='stratn'>(N=4177)</span></span></th>\n</tr>\n</thead>\n<tbody>\n<tr>\n<td class='rowlabel firstrow'><span class='varlabel'>diameter</span></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n</tr>\n<tr>\n<td class='rowlabel'>Mean (SD)</td>\n<td>0.455 (0.0710)</td>\n<td>0.326 (0.0881)</td>\n<td>0.439 (0.0844)</td>\n<td>0.408 (0.0992)</td>\n</tr>\n<tr>\n<td class='rowlabel lastrow'>Median [Min, Max]</td>\n<td class='lastrow'>0.465 [0.195, 0.650]</td>\n<td class='lastrow'>0.335 [0.0550, 0.550]</td>\n<td class='lastrow'>0.455 [0.110, 0.630]</td>\n<td class='lastrow'>0.425 [0.0550, 0.650]</td>\n</tr>\n<tr>\n<td class='rowlabel firstrow'><span class='varlabel'>height</span></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n</tr>\n<tr>\n<td class='rowlabel'>Mean (SD)</td>\n<td>0.158 (0.0400)</td>\n<td>0.108 (0.0320)</td>\n<td>0.151 (0.0348)</td>\n<td>0.140 (0.0418)</td>\n</tr>\n<tr>\n<td class='rowlabel lastrow'>Median [Min, Max]</td>\n<td class='lastrow'>0.160 [0.0150, 1.13]</td>\n<td class='lastrow'>0.110 [0, 0.220]</td>\n<td class='lastrow'>0.155 [0.0250, 0.515]</td>\n<td class='lastrow'>0.140 [0, 1.13]</td>\n</tr>\n<tr>\n<td class='rowlabel firstrow'><span class='varlabel'>length</span></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n</tr>\n<tr>\n<td class='rowlabel'>Mean (SD)</td>\n<td>0.579 (0.0862)</td>\n<td>0.428 (0.109)</td>\n<td>0.561 (0.103)</td>\n<td>0.524 (0.120)</td>\n</tr>\n<tr>\n<td class='rowlabel lastrow'>Median [Min, Max]</td>\n<td class='lastrow'>0.590 [0.275, 0.815]</td>\n<td class='lastrow'>0.435 [0.0750, 0.725]</td>\n<td class='lastrow'>0.580 [0.155, 0.780]</td>\n<td class='lastrow'>0.545 [0.0750, 0.815]</td>\n</tr>\n</tbody>\n</table>\n"

## Descriptive Data - a useful blog article

Learn more at <http://thatdatatho.com/2018/08/20/easily-create-descriptive-summary-statistic-tables-r-studio/>.

### Let’s look at the table1 package - for HTML tables

The package vignette is <https://cran.r-project.org/web/packages/table1/vignettes/table1-examples.html>

We can add some labels and make another table.

table1::label(abalone$shuckedWeight) <- "Shucked Weight"  
table1::label(abalone$visceraWeight) <- "Viscera Weight"  
table1::label(abalone$shellWeight) <- "Shell Weight"  
   
table1::table1(~shuckedWeight +   
 visceraWeight +   
 shellWeight | sex,   
 data = abalone)

## [1] "<table class=\"Rtable1\">\n<thead>\n<tr>\n<th class='rowlabel firstrow lastrow'></th>\n<th class='firstrow lastrow'><span class='stratlabel'>F<br><span class='stratn'>(N=1307)</span></span></th>\n<th class='firstrow lastrow'><span class='stratlabel'>I<br><span class='stratn'>(N=1342)</span></span></th>\n<th class='firstrow lastrow'><span class='stratlabel'>M<br><span class='stratn'>(N=1528)</span></span></th>\n<th class='firstrow lastrow'><span class='stratlabel'>Overall<br><span class='stratn'>(N=4177)</span></span></th>\n</tr>\n</thead>\n<tbody>\n<tr>\n<td class='rowlabel firstrow'><span class='varlabel'>Shucked Weight</span></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n</tr>\n<tr>\n<td class='rowlabel'>Mean (SD)</td>\n<td>0.446 (0.199)</td>\n<td>0.191 (0.128)</td>\n<td>0.433 (0.223)</td>\n<td>0.359 (0.222)</td>\n</tr>\n<tr>\n<td class='rowlabel lastrow'>Median [Min, Max]</td>\n<td class='lastrow'>0.441 [0.0310, 1.49]</td>\n<td class='lastrow'>0.170 [0.00100, 0.774]</td>\n<td class='lastrow'>0.422 [0.00650, 1.35]</td>\n<td class='lastrow'>0.336 [0.00100, 1.49]</td>\n</tr>\n<tr>\n<td class='rowlabel firstrow'><span class='varlabel'>Viscera Weight</span></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n</tr>\n<tr>\n<td class='rowlabel'>Mean (SD)</td>\n<td>0.231 (0.0976)</td>\n<td>0.0920 (0.0625)</td>\n<td>0.216 (0.105)</td>\n<td>0.181 (0.110)</td>\n</tr>\n<tr>\n<td class='rowlabel lastrow'>Median [Min, Max]</td>\n<td class='lastrow'>0.224 [0.0210, 0.590]</td>\n<td class='lastrow'>0.0805 [0.000500, 0.441]</td>\n<td class='lastrow'>0.210 [0.00300, 0.760]</td>\n<td class='lastrow'>0.171 [0.000500, 0.760]</td>\n</tr>\n<tr>\n<td class='rowlabel firstrow'><span class='varlabel'>Shell Weight</span></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n<td class='firstrow'></td>\n</tr>\n<tr>\n<td class='rowlabel'>Mean (SD)</td>\n<td>0.302 (0.126)</td>\n<td>0.128 (0.0849)</td>\n<td>0.282 (0.131)</td>\n<td>0.239 (0.139)</td>\n</tr>\n<tr>\n<td class='rowlabel lastrow'>Median [Min, Max]</td>\n<td class='lastrow'>0.295 [0.0250, 1.01]</td>\n<td class='lastrow'>0.113 [0.00150, 0.655]</td>\n<td class='lastrow'>0.276 [0.00500, 0.897]</td>\n<td class='lastrow'>0.234 [0.00150, 1.01]</td>\n</tr>\n</tbody>\n</table>\n"

### Next try the tableone package

See package vignette <https://cran.r-project.org/web/packages/tableone/vignettes/introduction.html>

library(tableone)  
CreateTableOne(data = abalone)

##   
## Overall   
## n 4177   
## X1 (mean (SD)) 2089.00 (1205.94)  
## sex (%)   
## F 1307 (31.3)   
## I 1342 (32.1)   
## M 1528 (36.6)   
## length (mean (SD)) 0.52 (0.12)   
## diameter (mean (SD)) 0.41 (0.10)   
## height (mean (SD)) 0.14 (0.04)   
## wholeWeight (mean (SD)) 0.83 (0.49)   
## shuckedWeight (mean (SD)) 0.36 (0.22)   
## visceraWeight (mean (SD)) 0.18 (0.11)   
## shellWeight (mean (SD)) 0.24 (0.14)   
## rings (mean (SD)) 9.93 (3.22)   
## sex\_factor (%)   
## Male 1528 (36.6)   
## Female 1307 (31.3)   
## Immature 1342 (32.1)

### Also try the arsenal package

See more at <https://eheinzen.github.io/arsenal/articles/tableby.html>

**NOTE**: We have to add results="asis" to the code chunk options for this to look pretty in the output.

Let’s make a table of the descriptive statistics for Abalone dimensions by sex. Look at height, diameter and length.

library(arsenal)  
table\_one <- tableby(sex ~ height + diameter + length, data = abalone)  
summary(table\_one, title = "Abalone Data")

Abalone Data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F (N=1307) | I (N=1342) | M (N=1528) | Total (N=4177) | p value |
| **height** |  |  |  |  | < 0.001 |
| Mean (SD) | 0.158 (0.040) | 0.108 (0.032) | 0.151 (0.035) | 0.140 (0.042) |  |
| Range | 0.015 - 1.130 | 0.000 - 0.220 | 0.025 - 0.515 | 0.000 - 1.130 |  |
| **diameter** |  |  |  |  | < 0.001 |
| Mean (SD) | 0.455 (0.071) | 0.326 (0.088) | 0.439 (0.084) | 0.408 (0.099) |  |
| Range | 0.195 - 0.650 | 0.055 - 0.550 | 0.110 - 0.630 | 0.055 - 0.650 |  |
| **length** |  |  |  |  | < 0.001 |
| Mean (SD) | 0.579 (0.086) | 0.428 (0.109) | 0.561 (0.103) | 0.524 (0.120) |  |
| Range | 0.275 - 0.815 | 0.075 - 0.725 | 0.155 - 0.780 | 0.075 - 0.815 |  |

## Your turn

Create a table of the abalone weights by sex. Put in variables wholeWeight, shuckedWeight, visceraWeight and shellWeight by sex.

Change the title to “Descriptive statistics of Abalone weights by sex”.

# insert your code here

## Try different output formats

Knit this document “to HTML”, then “to PDF”, and then “to Word” (DOC) formats and see what happens.