

STATISTICS

THE ART & SCIENCE OF LEARNING FROM DATA

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Chapter 2

Example 2: Shark Attacks by Region – Proportions & Percentages

```
> # Create dataset:
> Region <- c('Florida', 'Hawaii', 'South Carolina', 'California',
'North Carolina', 'Australia', 'South Africa', 'Reunion Island',
'Brazil', 'Bahamas', 'Other')
> Frequency <- c(203, 51, 34, 33, 23, 125, 43, 17, 16, 6, 138)
> Attacks <- data.frame(Region, Frequency)</pre>
> # Display the entire dataset:
> Attacks
           Region Frequency
1
          Florida
                         203
2
           Hawaii
                          51
3
  South Carolina
                          34
       California
                          33
5
                          23
  North Carolina
6
                         125
        Australia
7
     South Africa
                          43
  Reunion Island
                          17
9
           Brazil
                          16
10
          Bahamas
                           6
11
            Other
                         138
> # Display only the first 6 lines:
> head(Attacks,6)
          Region Frequency
1
         Florida
                        203
2
          Hawaii
                         51
3 South Carolina
                         34
      California
                         33
5 North Carolina
                         23
       Australia
6
                        125
```

```
> ## Or, you can read in the dataset via:
> ## path <-
'https://raw.githubusercontent.com/artofstat/data/master/Chapter2/shar
> ## Attacks <- read.csv(path)</pre>
> # Create column for the proportion in the dataframe:
> Attacks$Proportion <- Attacks$Frequency/sum(Attacks$Frequency)</pre>
> head(Attacks,6)
          Region Frequency Proportion
1
                      203 0.29462990
         Florida
2
         Hawaii
                       51 0.07402032
3 South Carolina
                       34 0.04934688
4
     California
                       33 0.04789550
5 North Carolina
                       23 0.03338171
      Australia
                      125 0.18142235
> # Create column for the percentage:
> Attacks$Percentage <- 100*(Attacks$Frequency/sum(Attacks$Frequency))</pre>
> head(Attacks,6)
          Region Frequency Proportion Percentage
1
         Florida
                      203 0.29462990 29.462990
2
         Hawaii
                       51 0.07402032
                                       7.402032
3 South Carolina
                       34 0.04934688
                                       4.934688
      California
                       33 0.04789550
                                       4.789550
5 North Carolina
                       23 0.03338171
                                       3.338171
                      125 0.18142235 18.142235
6
      Australia
> # For nicer printing in R, use dplyr package and declare data frame
as a table, using function as.tbl().
> # To install dplyr package on your system, use
install.packages('dplyr').
> # Then, load package into R using library():
> library(dplyr)
> Attacks <- as.tbl(Attacks)</pre>
> Attacks
# A tibble: 11 x 4
                 Frequency Proportion Percentage
   Region
   <fct>
                     < ldb>
                                <dbl>
                                           <dbl>
                              0.295
 1 Florida
                       203
                                          29.5
                                           7.40
 2 Hawaii
                        51
                              0.0740
 3 South Carolina
                        34
                              0.0493
                                           4.93
                              0.0479
 4 California
                        33
                                           4.79
 5 North Carolina
                        23
                              0.0334
                                           3.34
 6 Australia
                       125
                              0.181
                                          18.1
 7 South Africa
                        43
                              0.0624
                                           6.24
 8 Reunion Island
                        17
                              0.0247
                                           2.47
 9 Brazil
                        16
                              0.0232
                                           2.32
10 Bahamas
                              0.00871
                                           0.871
                         6
11 Other
                       138
                              0.200
                                          20.0
```