Titanic Example

This is an example about the passengers and crew aboard the *Titanic* in the book by De Veaux *et al.* The following lines are to import data from the file `Titanic.csv`. We can open the data file saved in a remote location; in this case Professor Nicholas Horton's website at https://nhorton.people.amherst.edu/is5/data.

```
dat <- read.csv(url(
  "https://nhorton.people.amherst.edu/is5/data/Titanic.csv"))
```

We use `head` and `tail` to examine the beginning and the end of the data frame.

```
head(dat)
```

```
##                             Name Survived     Boarded Class   MWC Age
## 1            ABBING, Mr Anthony     Dead Southampton     3   Man  42
## 2        ABBOTT, Mr Ernest Owen     Dead Southampton  Crew   Man  21
## 3      ABBOTT, Mr Eugene Joseph     Dead Southampton     3 Child  14
## 4    ABBOTT, Mr Rossmore Edward     Dead Southampton     3   Man  16
## 5 ABBOTT, Mrs Rhoda Mary 'Rosa'    Alive Southampton     3 Woman  39
## 6    ABELSETH, Miss Karen Marie    Alive Southampton     3 Woman  16
##   Adut_or_Chld    Sex  Paid Ticket_No Boat_or_Body                  Job
## 1        Adult   Male  7.55      5547                       Blacksmith
## 2        Adult   Male    NA                      Lounge Pantry Steward
## 3        Child   Male 20.25    CA2673                          Scholar
## 4        Adult   Male 20.25    CA2673        [190]             Jeweller
## 5        Adult Female 20.25    CA2673            A
## 6        Adult Female  7.65    348125           16
##            Class_Dept Class_Full
## 1 3rd Class Passenger          3
## 2    Victualling Crew          V
## 3 3rd Class Passenger          3
## 4 3rd Class Passenger          3
## 5 3rd Class Passenger          3
## 6 3rd Class Passenger          3
```

```
tail(dat)
```

```
##                          Name Survived     Boarded Class MWC Age Adut_or_Chld
## 2203 ZAKARIAN, Mr Mapriededer     Dead   Cherbourg     3 Man  22        Adult
## 2204       ZAKARIAN, Mr Ortin     Dead   Cherbourg     3 Man  27        Adult
## 2205      ZANETTI, Sig. Minio     Dead Southampton  Crew Man  20        Adult
## 2206       ZARRACCHI, Sig. L.     Dead Southampton  Crew Man  26        Adult
## 2207         ZENNI, Mr Philip    Alive   Cherbourg     3 Man  22        Adult
## 2208       ZIMMERMANN, Mr Leo     Dead Southampton     3 Man  29        Adult
##       Sex  Paid Ticket_No Boat_or_Body              Job          Class_Dept
## 2203 Male 7.225      2656        [304]                  3rd Class Passenger
## 2204 Male 7.225      2670              General Labourer 3rd Class Passenger
## 2205 Male    NA                       Assistant Waiter    Restaurant Staff
## 2206 Male    NA                            Wine Butler    Restaurant Staff
## 2207 Male 7.225      2620            6 General Labourer 3rd Class Passenger
## 2208 Male 7.875    315082                       Farmer 3rd Class Passenger
##      Class_Full
## 2203          3
## 2204          3
## 2205          R
## 2206          R
## 2207          3
```

```
## 2208          3
```

To create a one-way table of class:

```
table(dat$Class)
```

```
##
##    1    2    3 Crew
##  324  285  710  889
```

For a two-way table of class and "survived",

```
table(dat$Survived, dat$Class)
```

```
##
##           1   2   3 Crew
##   Alive 201 119 180  212
##   Dead  123 166 530  677
```

We assign the two-way table to `tbl`:

```
tbl <- table(dat$Survive, dat$Class)
```

To calculate % of overall total, % of row, and % of column, we do the following.

```
prop.table(tbl)
```

```
##
##                  1          2          3       Crew
##   Alive 0.09103261 0.05389493 0.08152174 0.09601449
##   Dead  0.05570652 0.07518116 0.24003623 0.30661232
```

```
prop.table(tbl, 1)
```

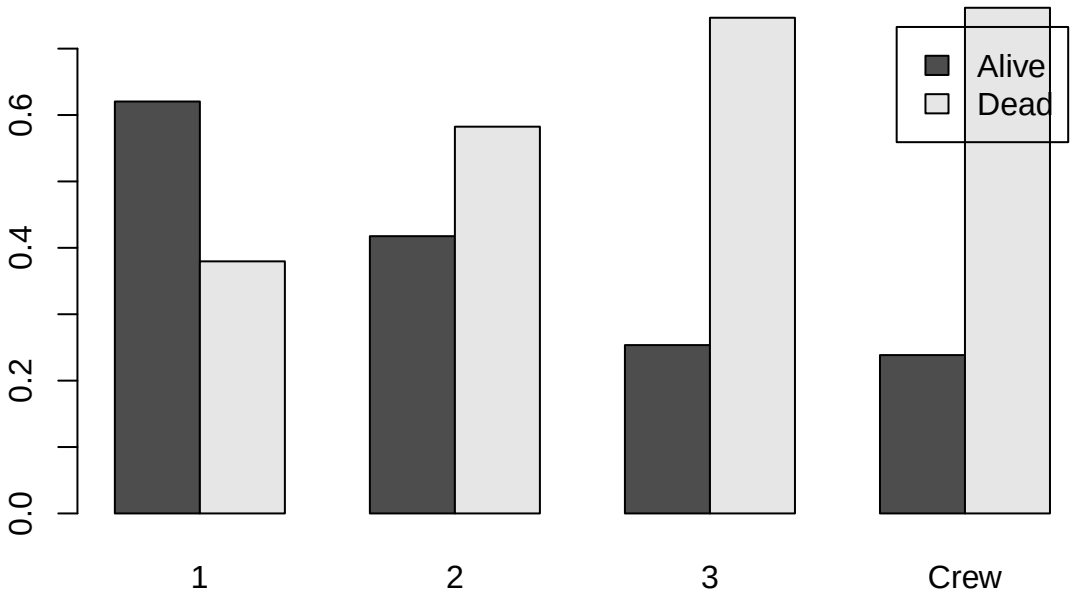
```
##
##                  1          2          3       Crew
##   Alive 0.28230337 0.16713483 0.25280899 0.29775281
##   Dead  0.08221925 0.11096257 0.35427807 0.45254011
```

```
prop.table(tbl, 2)
```

```
##
##                 1         2         3      Crew
##   Alive 0.6203704 0.4175439 0.2535211 0.2384702
##   Dead  0.3796296 0.5824561 0.7464789 0.7615298
```

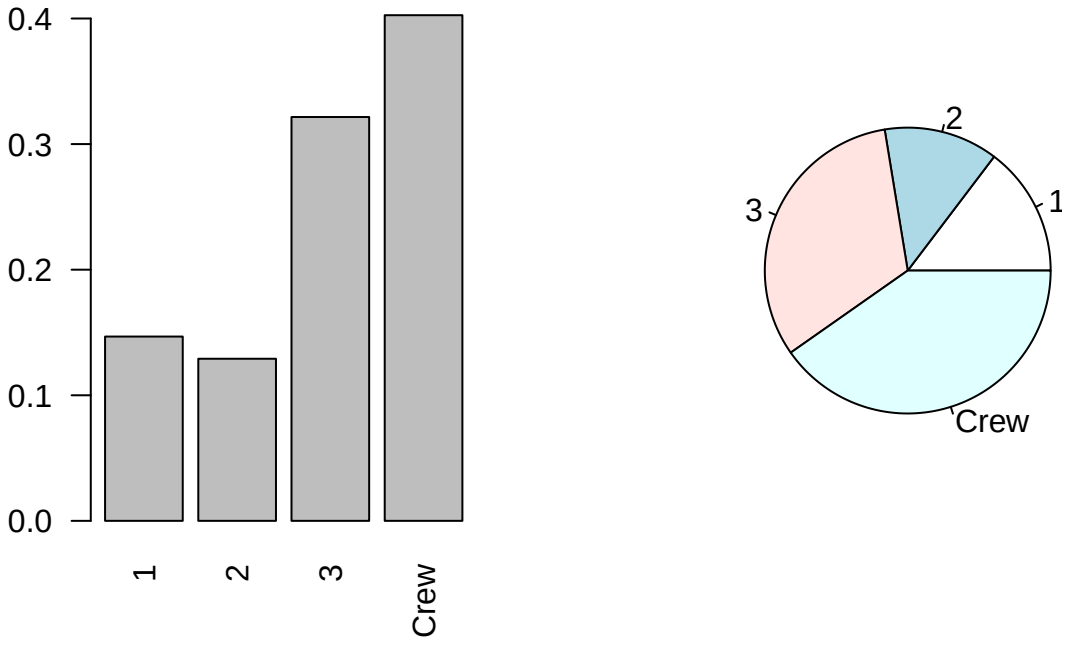
We can use the above two-way table to create a side-by-side bar chart.

```
barplot(prop.table(tbl, 2), beside = TRUE,
        legend = rownames(tbl))
```



Comparing relative frequency bar chart and pie chart:

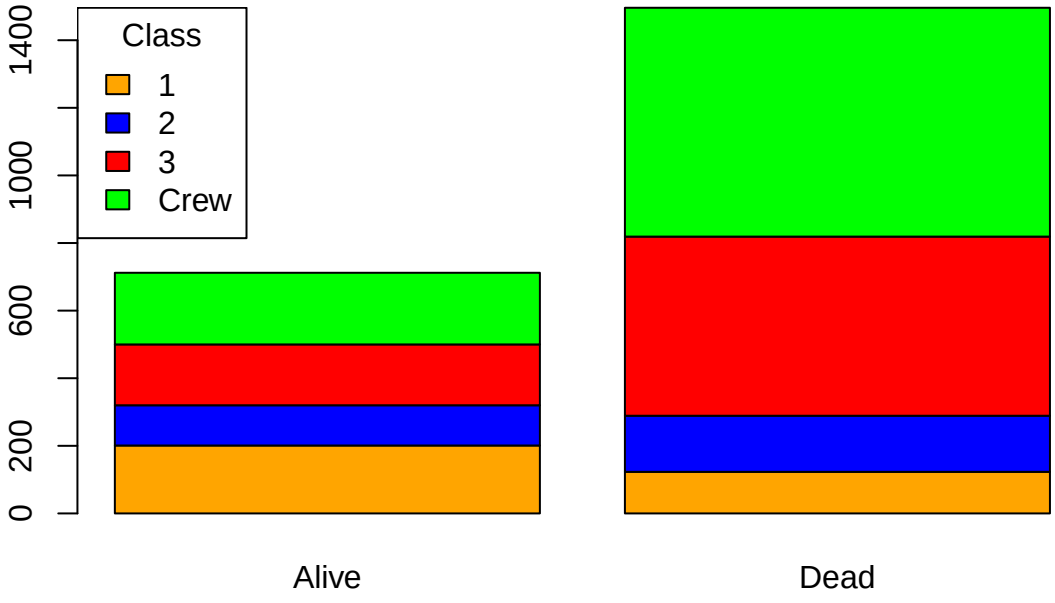
```
par(mfrow = c(1, 2))
barplot(table(dat$Class)/length(dat$Class), las = 2)
pie(table(dat$Class))
```




```
par(mfrow = c(1, 1))
```

For stacked bar chart:

```
tbl2 <- table(dat$Class, dat$Survived)
barplot(tbl2, col = c("orange", "blue", "red", "green"))
legend("topleft", legend = rownames(tbl2), title = "Class",
       fill = c("orange", "blue", "red", "green"))
```



We display ages of those aboard Titanit using a histogram.

```
hist(dat$Age)
```