1 The Template

The template for most functions (from the `mosaic` package in R) is:

```
functionname(     ~     , data =     )
```

2 Getting R to Work

Each command you type should be guided by the following 2 questions:

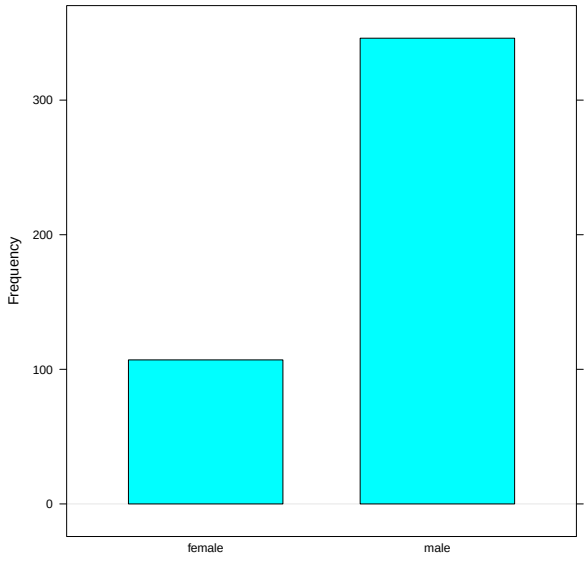
1. What do you want R to do?
2. What must R know to do that?

3 Exploring the Data

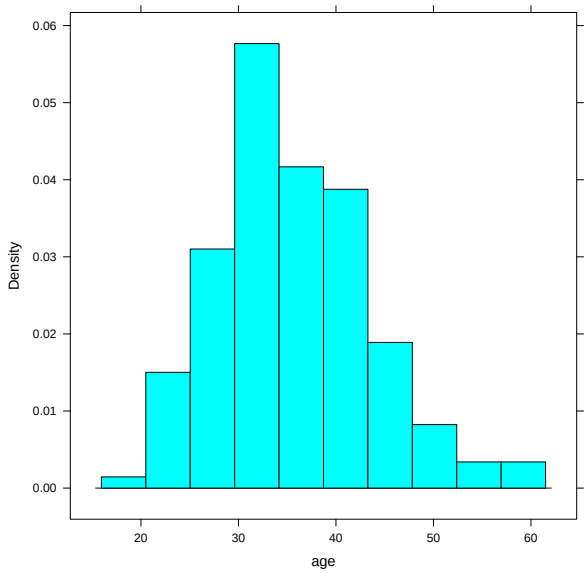
In this course, we'll work with datasets that have a combination of quantitative and categorical variables. Oftentimes, an important first step (before doing any analysis) is to explore the data. Here are some plots that are frequently used to visually display the data.

3.1 Univariate Summaries

```
  tally(~ sex, data=HELPrct)

##
## female   male
##    107    346

  bargraph(~ sex, data=HELPrct)
```



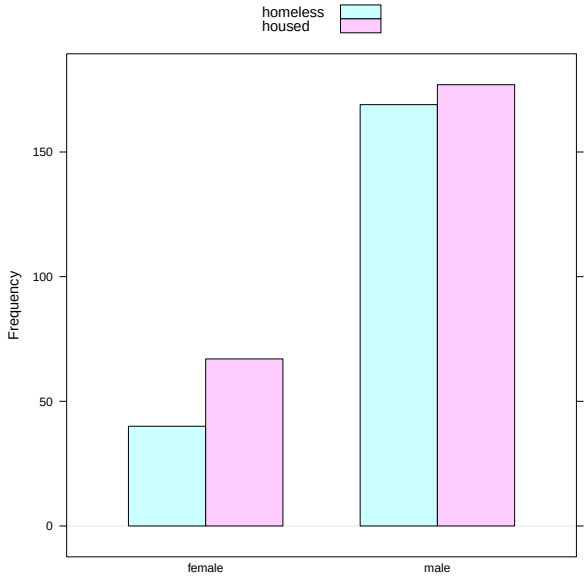

```
  favstats(~ age, data=HELPrct)

##  min Q1 median Q3 max     mean       sd   n missing
##   19 30     35 40  60 35.65342 7.710266 453       0

  histogram(~ age, data=HELPrct)
```



3.2 Bivariate Summaries

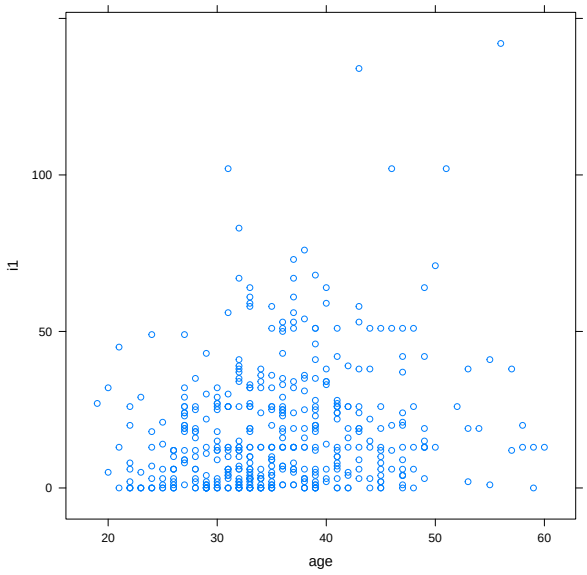
Categorical var. vs. categorical var.

```
  tally(homeless ~ sex, data=HELPrct)

##           sex
## homeless   female male
##   homeless     40  169
##   housed       67  177

  bargraph(~ sex, group = homeless,
                  data=HELPrct,
                  auto.key=TRUE)
```



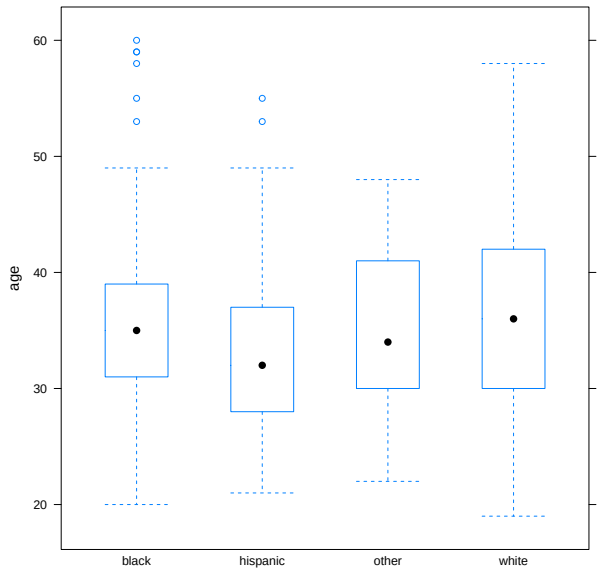
Quantitative var. vs. quantitative var.

```
  cor(i1 ~ age, data=HELPrct)

## [1] 0.2069538

  xyplot(i1 ~ age, data=HELPrct)
```



Categorical var. vs. quantitative var.

```
favstats(age ~ racegrp, data=HELPrct)

##     .group min    Q1 median    Q3 max     mean       sd   n missing
## 1    black  20 31.00     35 39.00  60 35.68246 7.083759 211       0
## 2 hispanic  21 28.25     32 36.25  55 33.20000 7.989789  50       0
## 3    other  22 30.00     34 40.50  48 34.96154 7.660187  26       0
## 4    white  19 30.00     36 42.00  58 36.46386 8.281152 166       0

bwplot(age ~ racegrp, data=HELPrct)
```



4 Helpful Tips

- R is case sensitive: `x` is not the same thing as `X`.
- In the console, `>` means R is ready for a new command, whereas `+` means R is *waiting for you to finish* an existing command. Hitting ESC gets you out of the latter scenario if you're there by accident.
- Not sure what a function like `summary()` does? Type the function name preceded by a question mark, like this: `?summary` to get help. Scroll down to Examples – replicate some of these on your own.
- If R throws you an error, read it before you panic. Usually, the error is more interpretable than you think!