```
> library(dslabs)
> library(dplyr)
> library(lubridate)
>
> data("reported_heights")
>
> dat <- mutate(reported_heights, date_time = ymd_hms(time_stamp)) %>%
+   filter(date_time >= make_date(2016, 01, 25) & date_time < make_date(2016, 02, 1)) %>%
+   mutate(type = ifelse(day(date_time) == 25 & hour(date_time) == 8 & between(minute(date_time), 15, 30),
 "inclass","online")) %>%
+   select(sex, type)
>
> y <- factor(dat$sex, c("Female", "Male"))
> x <- dat$type
> head(dat)
     sex    type
1 Female inclass
2 Female inclass
3   Male inclass
4 Female inclass
5   Male inclass
6   Male inclass
> dim(dat)
[1] 150   2
> dat %>% group_by(type) %>% summarize(avg_female = mean(sex == 'Female'))
# A tibble: 2 x 2
  type    avg_female
  <chr>        <dbl>
1 inclass      0.667
2 online       0.378
>
>
> y <- dat$sex
> x <- dat$type
> y_hat <- ifelse(x == "inclass", "Female", "Male") %>% factor()
> y_hat
  [1] Female Female Female Female Female Female Female Female Female Female
 [11] Female Female Female Female Female Female Female Female Female Female
 [21] Female Female Female Female Female Female Female Female Female Female
 [31] Female Female Female Female Female Female Female Female Female Male
 [41] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
 [51] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
 [61] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
 [71] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
 [81] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
 [91] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
[101] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
[111] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
[121] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
[131] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
[141] Male   Male   Male   Male   Male   Male   Male   Male   Male   Male
Levels: Female Male
> mean(y_hat == y)
[1] 0.6333333
>
>
> table(y_hat, y)
        y
y_hat    Female Male
  Female     26   13
  Male       42   69
>
>
> library(caret)
Loading required package: lattice
```

```
Attaching package: ‘caret’

The following object is masked from ‘package:purrr’:

    lift

> sensitivity(factor(y_hat), factor(y))
[1] 0.3823529
> specificity(factor(y_hat), factor(y))
[1] 0.8414634
>
>
> mean(dat$sex == "Female")
[1] 0.4533333
>
```