Appendix

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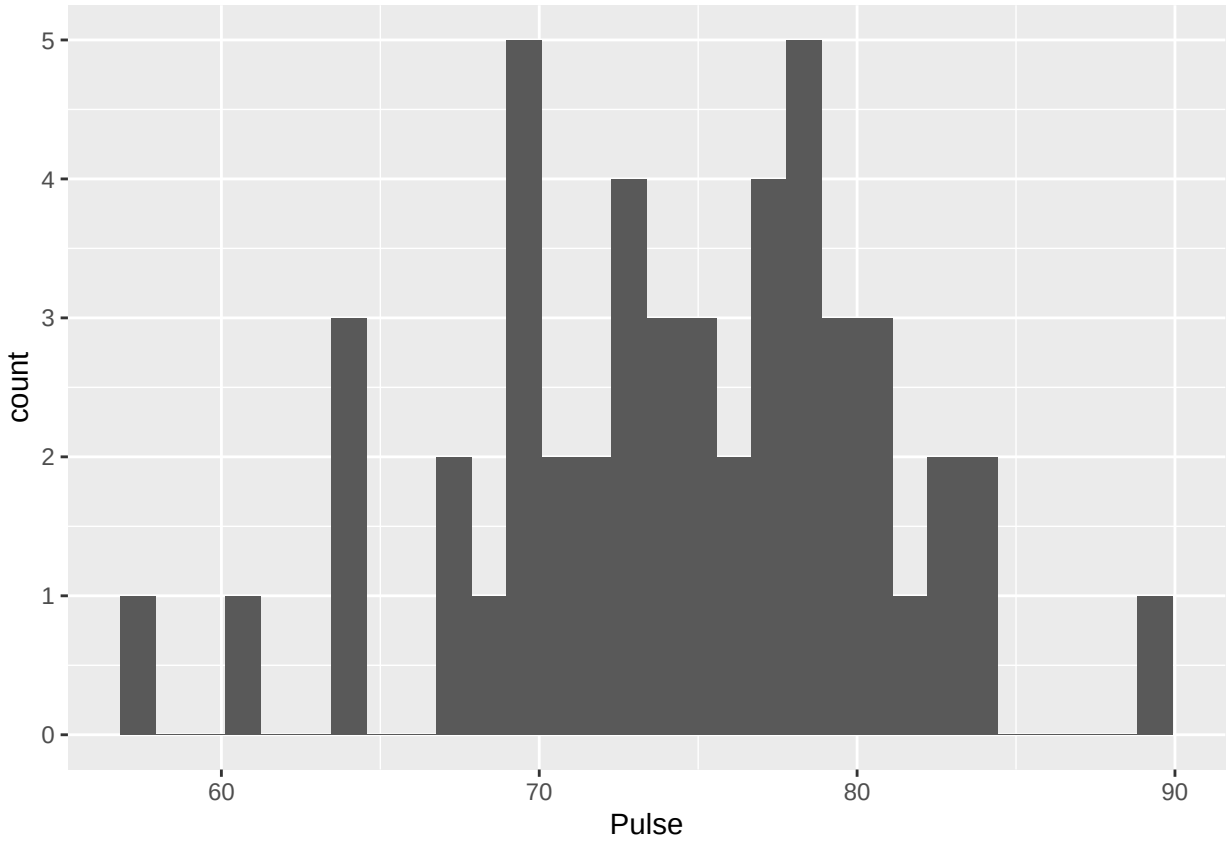
```
library(ggplot2)
library(dplyr)
library(mosaic)
library(mosaicData)
library(data.table)
library(Lock5Data)

data("BodyTemp50",package = "Lock5Data")
data("EmployedACS",package = "Lock5Data")
```

1) a)

```
ggplot(BodyTemp50) +
  geom_histogram(aes(x=Pulse))
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



1) b)

```
mean(BodyTemp50$Pulse)
```

```
## [1] 74.4
```

```
sd(BodyTemp50$Pulse)
```

```
## [1] 6.439673
```

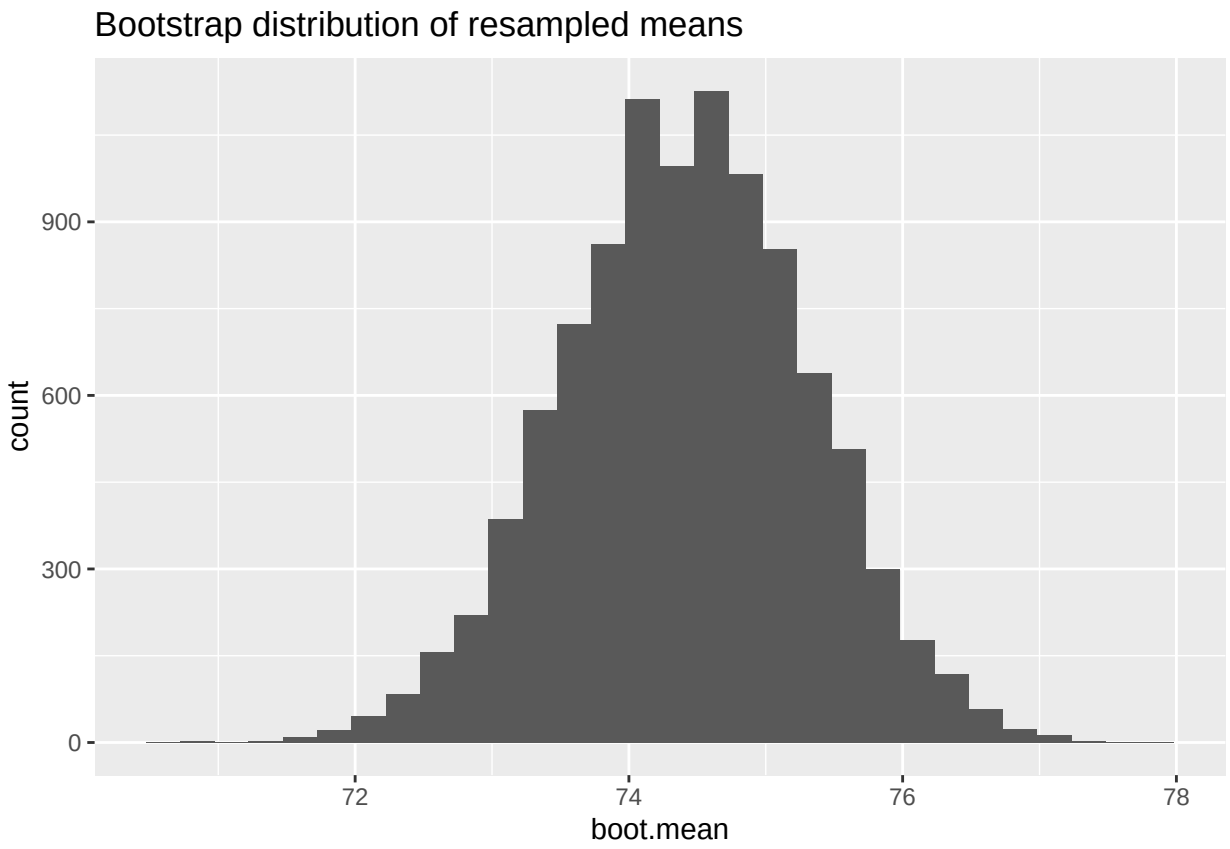
1) c)

```
BootDist <- mosaic::do(10000) *
  mosaic::resample(BodyTemp50) %>%
  summarise(boot.mean=mean(Pulse))
```

1) d)

```
ggplot(BootDist, aes(x=boot.mean)) +
  geom_histogram() +
  ggtitle('Bootstrap distribution of resampled means')
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



```r
mean(BootDist$boot.mean)
```

```
## [1] 74.41456
```

```r
sd(BootDist$boot.mean)
```

```
## [1] 0.8990674
```

1) e)

```r
quantile(BootDist$boot.mean, probs=c(0.025, 0.975))
```

```
##  2.5% 97.5%
## 72.62 76.18
```

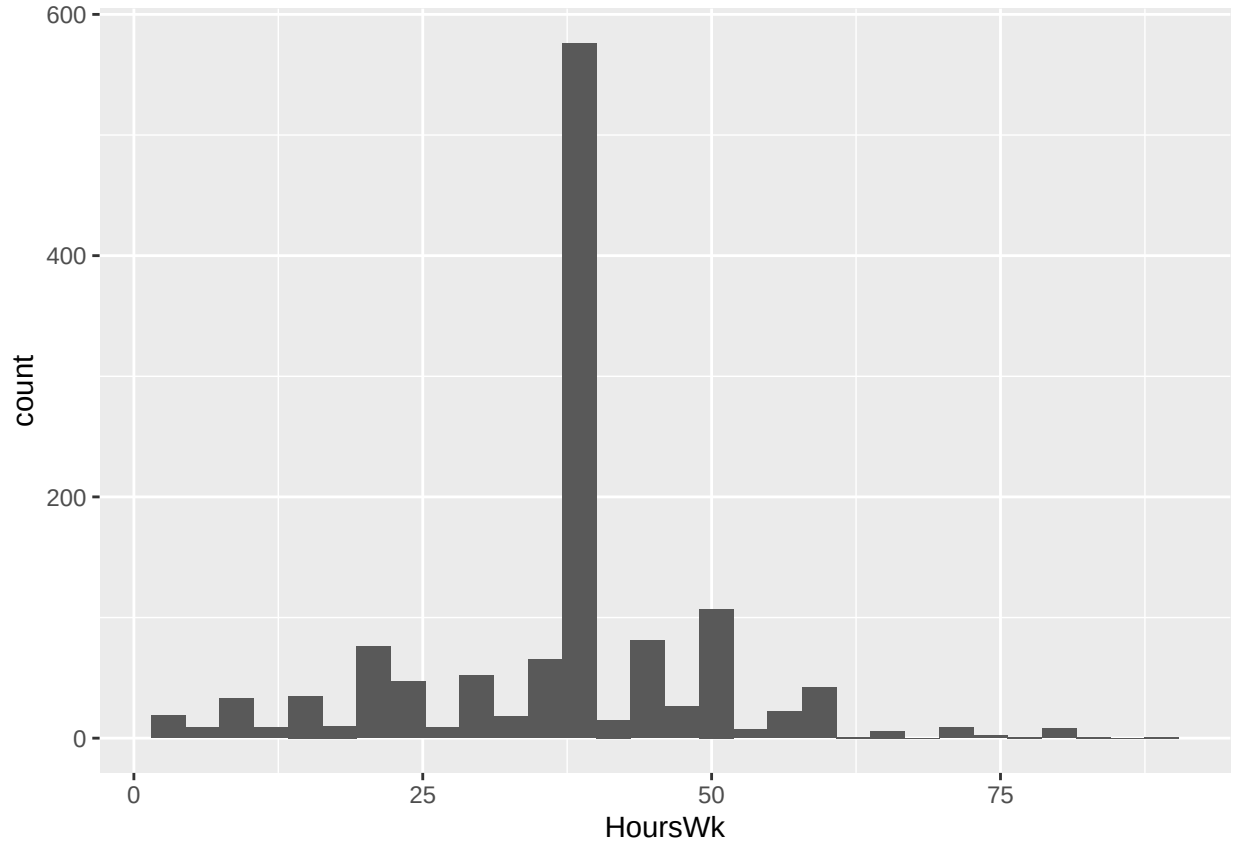
1) f)

```r
original.sample.mean <- mean(BodyTemp50$Pulse)
std.error <- sd(BootDist$boot.mean)
c(original.sample.mean - 2*std.error, original.sample.mean + 2*std.error)
```

```
## [1] 72.60187 76.19813
```

2) a)

```r
ggplot(EmployedACS) +
  geom_histogram(aes(x=HoursWk), bins=30)
```



2) b)

```
(sample.mean <- mean(EmployedACS$HoursWk))
```

```
## [1] 37.86713
```

```
(stddev <- sd(EmployedACS$HoursWk))
```

```
## [1] 12.94576
```

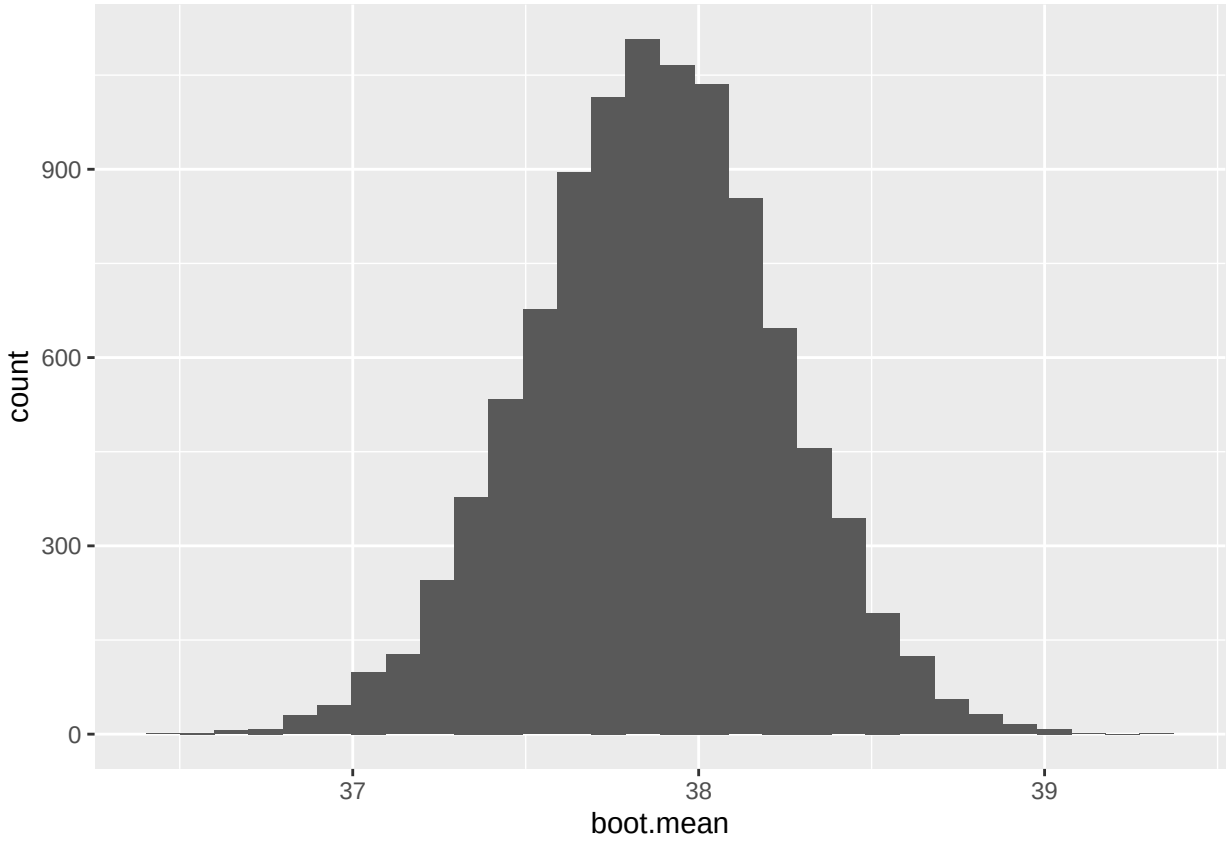
2) c)

```
hours.bootstrap <- mosaic::do(10000) *
  mosaic::resample(EmployedACS) %>%
  summarise(boot.mean=mean(HoursWk))
```

2) d)

```
ggplot(hours.bootstrap) +
  geom_histogram(aes(x=boot.mean))
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```




```
mean(hours.bootstrap$boot.mean)
```

```
## [1] 37.87048
```

```
sd(hours.bootstrap$boot.mean)
```

```
## [1] 0.3606566
```

2) e)

```
quantile(hours.bootstrap$boot.mean, probs=c(0.025, 0.975))
```

```
##     2.5%    97.5%
## 37.15307 38.56954
```

2) f)

```
std.error <- sd(hours.bootstrap$boot.mean)
c(sample.mean - 2*std.error, sample.mean + 2*std.error)
```

```
## [1] 37.14582 38.58845
```

3) a)

```
BootDist <- mosaic::do(10000) *
  mosaic::resample(BodyTemp50) %>%
  summarise(boot.sd=sd(Pulse))
```

3) b)

```
quantile(BootDist$boot.sd, probs=c(0.025, 0.975))
```

```
##     2.5%    97.5%
## 5.043631 7.607276
```