**Bootstrap means histogram**
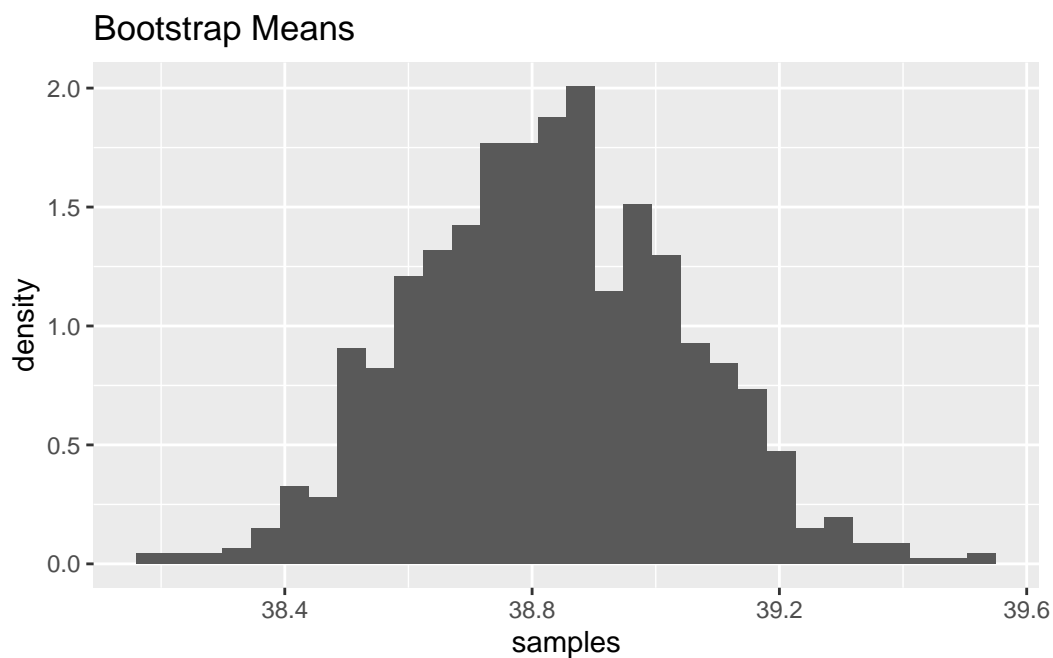
```
adelie <- penguins |>
    filter(`species` == "Adelie") |>
    drop_na()
```

```
bootstrap_mean <- function(data) {
    sample <- data |> sample_frac(1, replace = TRUE)
    return(mean(pull(sample)))
}
```

```
samples <- replicate(1000, bootstrap_mean(adelie |> select("bill_length_mm")))
ggplot() +
    geom_histogram(aes(x = samples, y = after_stat(density))) +
    labs(title = "Bootstrap Means")
```

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

## Bootstrap means ECDF

```
ggplot() +
    stat_ecdf(aes(x = samples)) +
    labs(title = "ECDF for bootstrap means", x = "Sample Mean", y = "Quantile")
```

### ECDF for bootstrap means