014 - Inference about a Population Proportion (π)

EPIB 607 - FALL 2020

Sahir Rai Bhatnagar
Department of Epidemiology, Biostatistics, and Occupational Health
McGill University

sahir.bhatnagar@mcgill.ca

slides compiled on November 4, 2020

Motivating Example

```r
head(depths)
```

```
##           X  lon  lat  alt water South
## 26118 26118  158  8.8 5044     1     0
## 29349 29349  -52 29.3 5277     1     0
## 4391   4391 -133 13.7 5032     1     0
## 9424   9424  156 13.4 5727     1     0
## 9082   9082 -113 23.6 3551     1     0
## 25102 25102  -98 23.4   20     1     0
```

```r
dim(depths)
```

```
## [1] 400   6
```

```r
fit <- lm(alt ~ 1, data = depths)
print(summary(fit), signif.stars = F)
```

```
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   3628.5       86.5      42   <2e-16
##
## Residual standard error: 1730 on 399 degrees of freedom
```

```r
fit <- lm(alt ~ South, data = depths)
print(summary(fit), signif.stars = F)
```

```
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)     3523        122   28.82   <2e-16
## South            211        173    1.22     0.22
##
## Residual standard error: 1730 on 398 degrees of freedom
## Multiple R-squared: 0.00372,^^IAdjusted R-squared: 0.00122
## F-statistic: 1.49 on 1 and 398 DF,  p-value: 0.223
```

```r
stats::t.test(alt ~ South, data = depths, var.equal = TRUE)
```

```
##  Two Sample t-test with alt by South
## t = -1.2, df = 398, p-value = 0.2235
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -551  129
## sample estimates:
## mean in group 0 mean in group 1
##            3523            3734
```