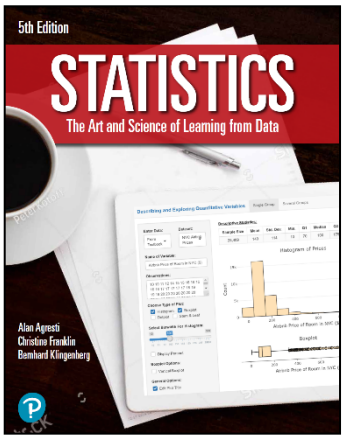

R Code for Examples in the book
"Statistics: The Art and Science of Learning from Data"
by Agresti, Franklin and Klingenberg, 5th edition

Chapter 9

Example 4: Opinion on Fracking – Two-Sided Significance Tests

To make a two-sided significance test about a population proportion, you can use

```
prop.test(x = 637, n = 1353, p = 0.5, alternative = 'two.sided',
          conf.level = 0.95, correct = FALSE)

##
##  1-sample proportions test without continuity correction
##
## data:  637 out of 1353, null probability 0.5
## X-squared = 4.6127, df = 1, p-value = 0.03174
## alternative hypothesis: true p is not equal to 0.5
## 95 percent confidence interval:
##  0.4443291 0.4974474
## sample estimates:
##         p
## 0.4708056
```

Alternatively, you can also do the manual computation

```
x <- 637
n <- 1353
phat <- x / n
p_0 <- 0.5 # the value that p takes in the null hypothesis
se_0 <- sqrt(p_0 * (1 - p_0) / n)
z <- (phat - p_0) / se_0
```

To compute the p value for a two-sided alternative hypothesis

```
2 * pnorm(z)

## [1] 0.0317358
```