Wrapping up Hypothesis Testing on Proportion

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Today

- One more example of confidence interval and hypothesis testing
- Practical significance vs statistical significance
- What if we have population data

GT200 the bomb detector

- Probably the most expensive scam in the world with significant political repercussion.
- `https://www.youtube.com/watch?v=Ykv4PU7QXnU`

Testing GT200

- Systematic test
- Four boxes one of which contains a bomb. Go find it using this plastic piece of junk.
- If you pick randomly, what is the rate of identifying the bomb?
- 60 trials of the test. The officers correctly identify the bomb 18 times.

Bootstrap hypothesis testing

```
library(bootstrap)
gt200data = c(rep(1, 18), rep(0, 60-18))
b = bootstrap(gt200data, nboot=10000, theta=mean)
sum(b$thetastar > 0.25) / 10000
```

```
## [1] 0.7475
```

What do we conclude?

Bootstrap confidence interval

```
gt200data = c(rep(1, 18), rep(0, 60-18))
b = bcanon(gt200data, nboot=10000, theta=mean,
           alpha=c(0.975, 0.025))
b$confpoints
```

```
##       alpha bca point
## [1,] 0.975    0.4000
## [2,] 0.025    0.1833
```

What is the practical interpretation of the confidence interval?