Week_11_power_and_sample_size

Cici

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LO:

1. Understand intuition behind power calculations
2. Know how to perform power/sample size analysis with formula or in R
3. Reveal the relationship among significance level, power, effect size and sample size
4. Demonstrate different stages in clinical trails and stopping rules

Notes:

1. effect size: the difference to be detected.
2. variantion (sigmal square): larger sample size, smaller variation.
3. P(type I error) = significance level (alpha)

P (type II error) = beta

power of a hypothesis = 1 - beta

4. power is affected by alpha, sample size, effect size.
5. calculate sample size in R.

```
delta = 2
sigma = 5.7
d = delta/sigma
power.t.test(d = d, sig.level = 0.05, power = 0.8, type = 'two.sample', alternative = "two.sided")
```

power.t.test(n = NULL, delta = NULL, sd = 1, sig.level = 0.05, power = NULL, type = c("two.sample", "one.sample", "paired"), alternative = c("two.sided", "one.sided"), strict = FALSE, tol = .Machine$double.eps^0.25)

delta: effect size

Codes:

seq(5,100,by = 5)