

Math Stat 465

Hypothesis Testing with a Continuous Distribution – An Example (Continued)

Consider the company producing 2 lb. cans of coffee. Suppose the company is actually concerned about both overfill and underfill. As before, the company would rather not stop production, which is costly, but will do so if the evidence of underfill or overfill is strong.

Denote the true mean net weight by μ . As before, we suppose that the net weight of a can is modeled as a random variable with a $N(\mu, \sigma^2)$ distribution, and that we know $\sigma = .1$ lb.

1. Find the null and alternate hypotheses.

$H_0 :$

$H_a :$

2. The company decides to test for underfill or overfill by taking a random sample of $n = 16$ cans and to stop the process if $\bar{X} < 1.951$ lbs. or $\bar{X} > 2.049$ lbs.

(a) Find α (= probability of a type I error)

(b) Find β (= probability of a type II error) when $\mu = 1.98$ lbs.

(c) Find β when $\mu = 2.03$ lbs.