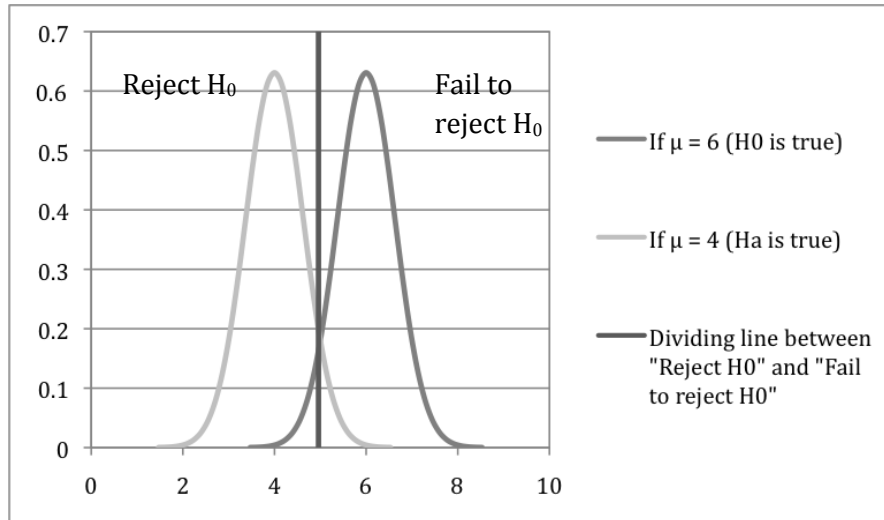# Type I and Type II Error

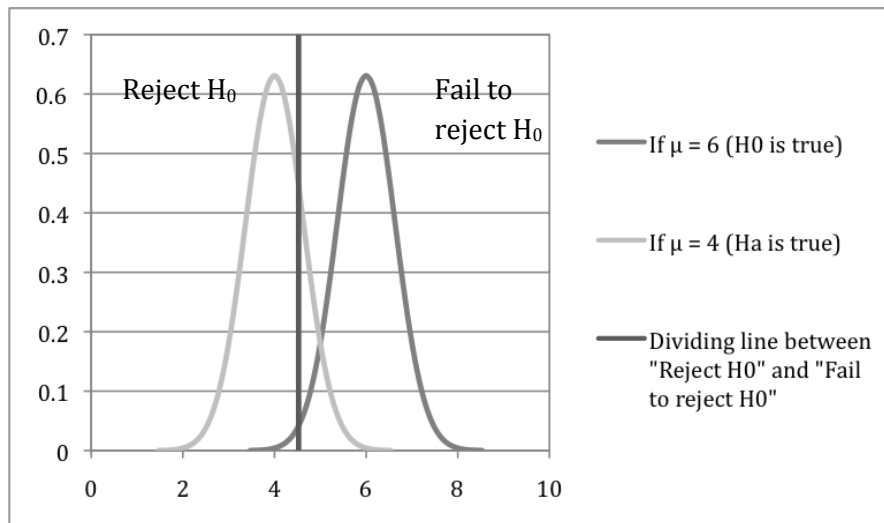Change made: decrease the significance level α from 0.05 to 0.01

1. Shade the areas that correspond to type I error and type II error using different colors.

$\alpha = 0.05$
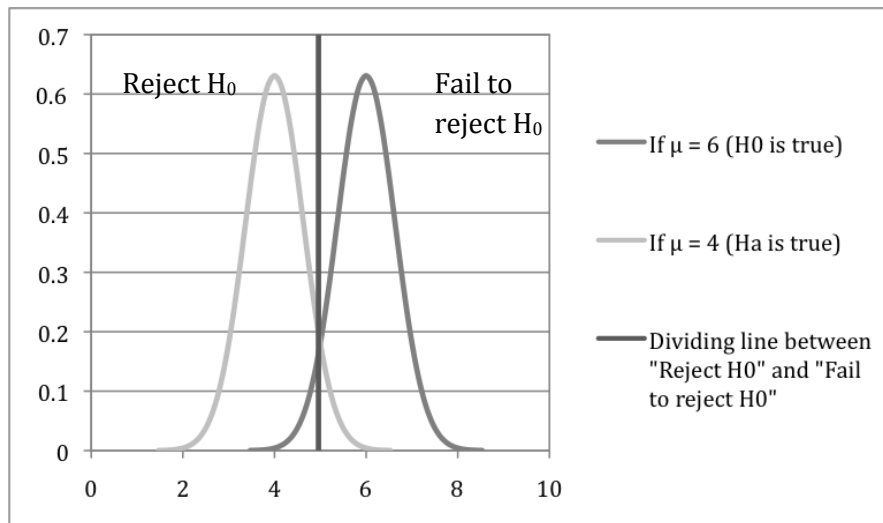

$\alpha = 0.01$

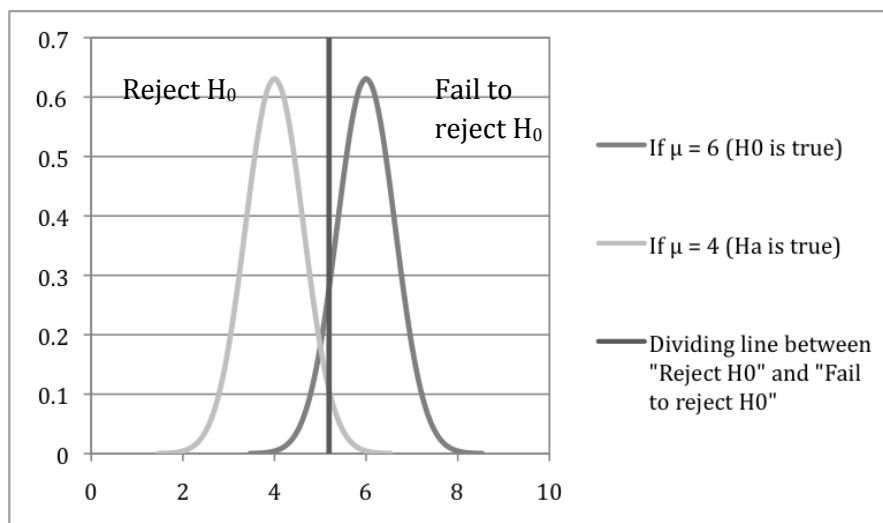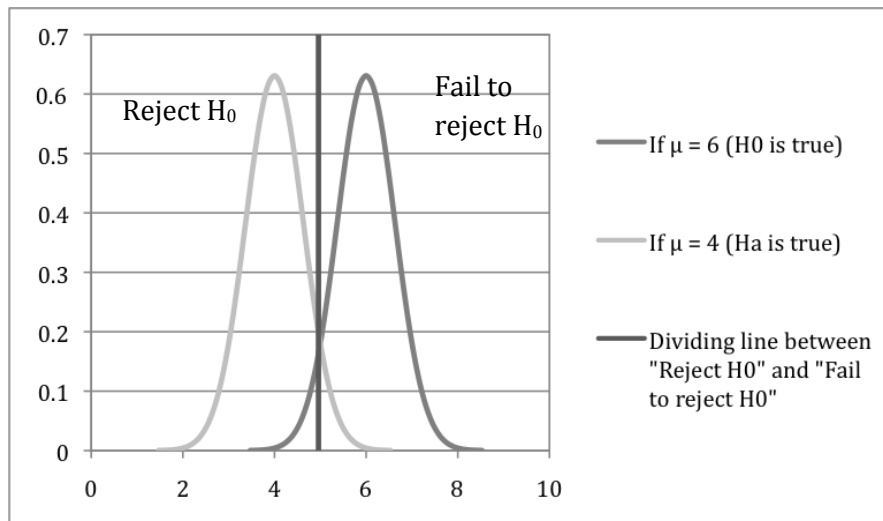2. What about the graph changed?

3. Pros:

4. Negatives:

Change made: increase the significance level α from 0.05 to 0.10

5. Shade the areas that correspond to type I error and type II error using different colors.

$\alpha = 0.05$

0.7

0.6   Reject H₀   Fail to
                               reject H₀
0.5   ── If $\mu = 6$ (H0 is true)

0.4
                                             ── If $\mu = 4$ (Ha is true)
0.3

0.2   ── Dividing line between
                                                "Reject H0" and "Fail
0.1   to reject H0"

0
   0   2   4   6   8   10

$\alpha = 0.10$

0.7

0.6   Reject H₀   Fail to
                               reject H₀
0.5   ── If $\mu = 6$ (H0 is true)

0.4
                                             ── If $\mu = 4$ (Ha is true)
0.3

0.2   ── Dividing line between
                                                "Reject H0" and "Fail
0.1   to reject H0"

0
   0   2   4   6   8   10
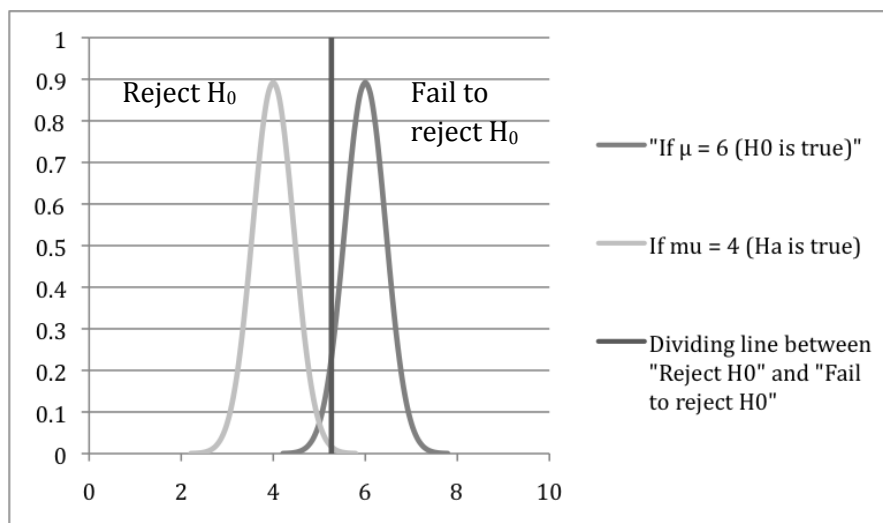
6. What about the graph changed?

7. Pros:

8. Negatives:

Change made: increase the sample size from n = 10 to n = 20

9. Shade the areas that correspond to type I error and type II error using different colors.

n = 10

n = 20

10. What about the graph changed?

11. Pros:

12. Negatives:

Summary:

13. How can we decrease the probability of a type I error?

14. How can we decrease the probability of a type II error?