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Chapter 9

Inferences Based on Two Samples

- 9.1 z-Tests
- 9.2 The Two-Sample t-Test
- 9.4 Difference Between Population Proportions
- 9.5 Two-Population Variances**

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Summary for $H_0: \sigma_1 = \sigma_2$

Test statistic value:
$$f = \frac{S_1^2}{S_2^2}$$

$H_a: \sigma_1 > \sigma_2$ reject when $f \geq F_{\alpha, m-1, n-1}$
 $H_a: \sigma_1 < \sigma_2$ reject when $f \leq F_{1-\alpha, m-1, n-1}$
 $H_a: \sigma_1 \neq \sigma_2$ reject when $f \geq F_{\alpha/2, m-1, n-1}$ or $f \leq F_{1-\alpha/2, m-1, n-1}$

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Example

Suppose a factory claims that after special installation, the standard deviation of the filling amount of food into cans has been decreased. Before installation, a sample of size 121 yields a sample standard deviation of 4.3, while after installation a sample of size 201 yields a sample standard deviation of 4.0.

Can the factory's claim be confirmed? Use $\alpha=0.05$.

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