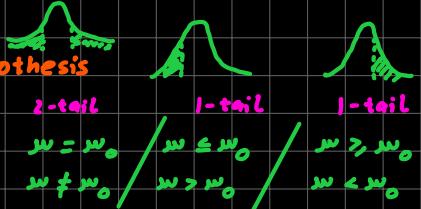


① Define Hypothesis



- Null, H_0 ; $\mu = \mu_0$ $\mu \leq \mu_0$ $\mu > \mu_0$
 - Alternative H ; $\mu \neq \mu_0$ $\mu > \mu_0$ $\mu < \mu_0$

② Level of significance = α

- Prob of rejecting True null Hypothesis = α : Type I Error
 - Prob of accepting False null Hypothesis = β : Type II Error

level of significance
Prob of Type I error when null hypothesis is true as an equality

③ Test Statistics

$$\cdot z = \frac{\bar{x} - \mu_x}{\frac{\sigma}{\sqrt{n}} \text{ (FPC)}}, \quad t = \frac{\bar{x} - \mu_x}{\frac{s}{\sqrt{n}} \text{ (FPC)}}$$

σ known

σ unknown

FPC if N/ pop given

$$\begin{aligned} \text{if } H_1 : m > m_0 & \quad t \geq t_{\alpha(v)} \\ : m < m_0 & \quad t \leq -t_{\alpha(v)} \\ : m \neq m_0 & \quad t \leq -t_{\alpha(v)} \quad t \geq t_{\alpha(v)} \end{aligned}$$

④ calculate p-value using test statistic

TABLE 9.2 SUMMARY OF HYPOTHESIS TESTS ABOUT A POPULATION MEAN:
 σ KNOWN CASE

	Lower Tail Test	Upper Tail Test	Two-Tailed Test
Hypotheses	$H_0: \mu \geq \mu_0$ $H_a: \mu < \mu_0$	$H_0: \mu \leq \mu_0$ $H_a: \mu > \mu_0$	$H_0: \mu = \mu_0$ $H_a: \mu \neq \mu_0$
Test Statistic	$z = \frac{\bar{x} - \mu_0}{\sigma/\sqrt{n}}$	$z = \frac{\bar{x} - \mu_0}{\sigma/\sqrt{n}}$	$z = \frac{\bar{x} - \mu_0}{\sigma/\sqrt{n}}$
Rejection Rule: p-Value Approach	Reject H_0 if $p\text{-value} \leq \alpha$	Reject H_0 if $p\text{-value} \leq \alpha$	Reject H_0 if $p\text{-value} \leq \alpha$
Rejection Rule: Critical Value Approach	Reject H_0 if $z \leq -z_{\alpha}$	Reject H_0 if $z \geq z_{\alpha}$	Reject H_0 if $z \leq -z_{\alpha/2}$ or if $z \geq z_{\alpha/2}$

TABLE 9.3 SUMMARY OF HYPOTHESIS TESTS ABOUT A POPULATION MEAN:
 σ UNKNOWN CASE

	Lower Tail Test	Upper Tail Test	Two-Tailed Test
Hypotheses	$H_0: \mu \geq \mu_0$ $H_a: \mu < \mu_0$	$H_0: \mu \leq \mu_0$ $H_a: \mu > \mu_0$	$H_0: \mu = \mu_0$ $H_a: \mu \neq \mu_0$
Test Statistic	$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$	$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$	$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$
Rejection Rule: <i>p-Value Approach</i>	Reject H_0 if $p\text{-value} \leq \alpha$	Reject H_0 if $p\text{-value} \leq \alpha$	Reject H_0 if $p\text{-value} \leq \alpha$
Rejection Rule: <i>Critical Value Approach</i>	Reject H_0 if $t \leq -t_{\alpha}$	Reject H_0 if $t \geq t_{\alpha}$	Reject H_0 if $t \leq -t_{\alpha/2}$ or if $t \geq t_{\alpha/2}$