

9.8: Formula Review

9.3 Probability Distribution Needed for Hypothesis Testing

Table 9.8.1: Test Statistics for Test of Means, Varying Sample Size, Population Known or Unknown

Type of Hypothesis Test	Population Parameter	Estimated value (point estimate)	Probability Distribution Used
Hypothesis test for the mean, when the population standard deviation is known	Population mean μ	Sample mean \bar{x}	Normal distribution, $\bar{X} \sim N\left(\mu_X, \frac{\sigma_X}{\sqrt{n}}\right)$
Hypothesis test for the mean, when the population standard deviation is unknown and the distribution of the sample mean is approximately normal	Population mean μ	Sample mean \bar{x}	Student's t-distribution, t_{df}
Hypothesis test for proportions	Population proportion p	Sample proportion p'	Normal distribution, $P' \sim N\left(p, \sqrt{\frac{p \cdot q}{n}}\right)$

9.4 Full Hypothesis Test Examples

Test statistic for a hypothesis test of proportions:

$$Z_c = \frac{p' - p_0}{\sqrt{\frac{p_0(1 - p_0)}{n}}}$$

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