Steps in Hypothesis Testing

A. Univariate Tests for Large Samples

	Mean	Proportion
1. Assumptions	Random Sample, Interval Variable, Large Sample	Random Sample, Categorical Variable, Large Sample
2. Hypotheses	$H_0: \mu = a$ $H_a: \mu \neq a$ or $H_a: \mu < a$ or $H_a: \mu > a$	$H_0: \pi = a$ $H_a: \pi \neq a$ or $H_a: \pi < a$ or $H_a: \pi > a$
3. Test Statistic	$z = \frac{\overline{Y} - a}{\hat{s}_{\overline{Y}}}$	$z = \frac{p - a}{\hat{s}_p}$

4. p-value — Use Table A: If H_a is a two sided test give area in both tails; if H_a is one-sided, give area from one-tail.

5. Conclusion — Reject H_0 (accept H_a), if p-value is below some “conventional” level of significance (usually .05 in the social sciences).

B. Bivariate Tests for Large Samples

	Difference of Means	Difference of Proportions
1. Assumptions	Two Interval Variables, Large Independent Samples	Two Categorical Variables, Large Independent Samples
2. Hypotheses	$H_0: \mu_1 = \mu_2$ $H_a: \mu_1 \neq \mu_2$ or $H_a: \mu_1 < \mu_2$ or $H_a: \mu_1 > \mu_2$	$H_0: \pi_1 = \pi_2$ $H_a: \pi_1 \neq \pi_2$ or $H_a: \pi_1 < \pi_2$ or $H_a: \pi_1 > \pi_2$
3. Test Statistic	$z = \frac{\overline{Y_2} - \overline{Y_1}}{\hat{s}_{\overline{Y_2} - \overline{Y_1}}}$	$z = \frac{p_2 - p_1}{\hat{s}_{p_2 - p_1}}$

4. p-value — Use Table A: If H_a is a two sided test give area in both tails; if H_a is one-sided, give area from one-tail.

5. Conclusion — Reject H_0 (accept H_a), if p-value is below some “conventional” level of significance (usually .05 in the social sciences).