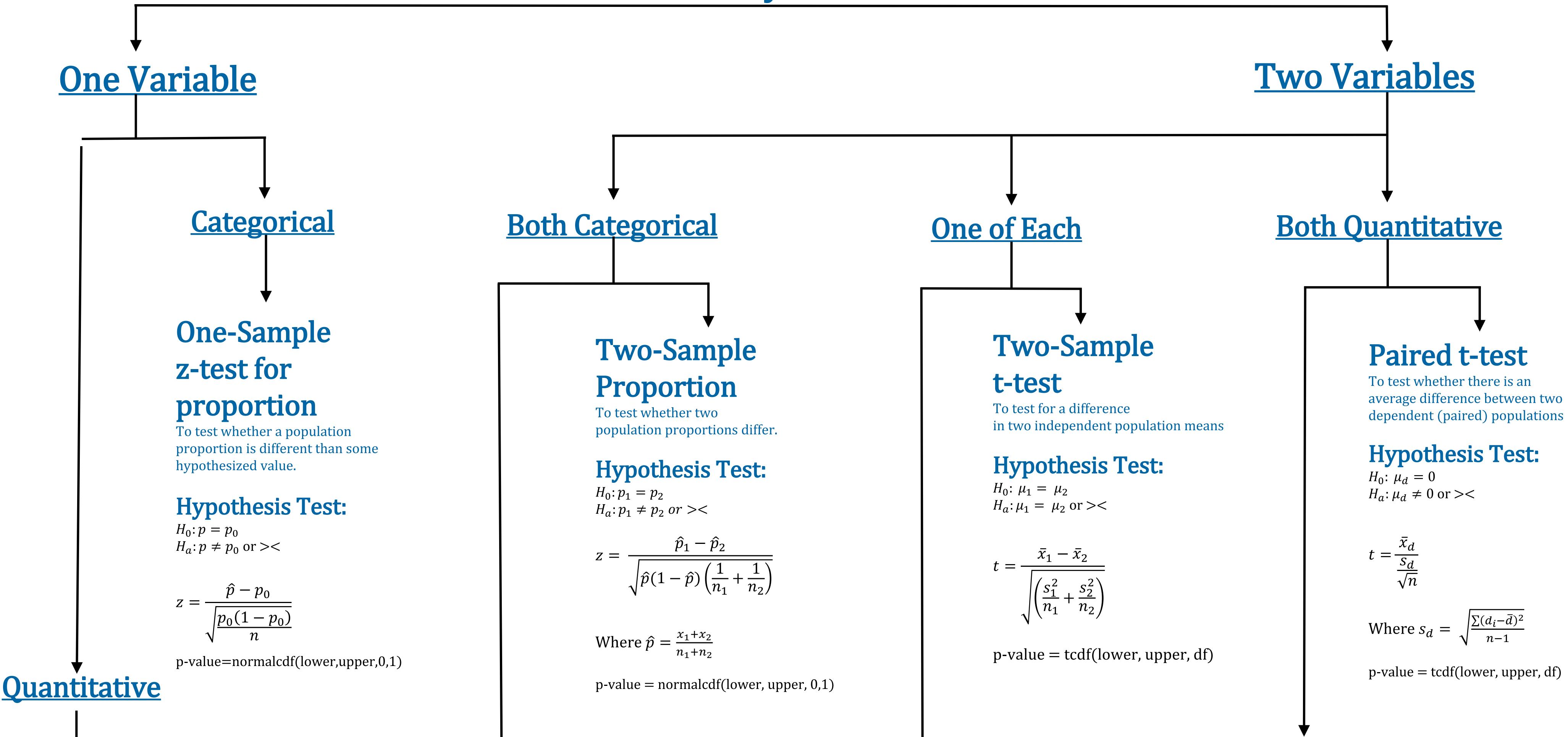


# Hypothesis Test Flow Chart



# How many variables?



# One-Sample t-test for mean

To test whether there is a difference between a population mean and some hypothesized value.

#### **Hypothesis Test:**

 $H_0$ :  $\mu = \mu_0$  $H_a$ :  $\mu \neq \mu_0$  or ><

$$t = \frac{\bar{x} - \mu_0}{\frac{S}{\sqrt{n}}}$$

## Chi-Square

Used to test for a relationship in population between two categorical variables

#### **Hypothesis Test:**

 $H_0$ : There is no relationship in population between Var 1 & Var 2  $H_a$ : There is a relationship in population between Var 1 & Var 2

$$X^2 = \sum \frac{(observed - expected)^2}{expected}$$

p-value = Fcdf(lower, upper, df<sub>1</sub>, df<sub>2</sub>)

**ANOVA F-test** 

To test whether at least one

**Hypothesis Test:** 

 $H_a$ : at lease one  $\mu_i$  different from

 $H_0: \mu_1 = \mu_2 = \mu_3 \dots \mu_i$ 

others

 $F = \frac{MSB}{MSE}$ 

group mean differs from the others

# Simple Linear Regression

To test for a linear relationship in population between two quantitative variables

### Population Regression Model:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

#### **Overall F-test:**

$$F = \frac{MSB}{MSE}$$

p-value = Fcdf(lower, upper, df<sub>1</sub>, df<sub>2</sub>)