INFERENCE CONDITIONS

You must demonstrate (or assume if necessary) that the following conditions are met before performing a hypothesis test or constructing a confidence interval:

MEANS (*t*)	
One Sample	1. Random sample or randomized experiment 2. ONE of the following: a) population is normally distributed b) sample size is *large* for CLT c) sample data shows evidence of normality with no outliers (boxplot, normal probability plot) 3. Independent ($N > 10n$) ***… I will use t procedures for population means with n-1 degrees of freedom***
Within Subjects/Matched-Pairs (One list of differences is created from 2 **matched** lists)	1. Data comes from a within-subjects or matched pairs design 2. Conditions 1-3 above apply to list of differences ***… I will use t procedures for matched pairs with n – 1 degrees of freedom***
Two Independent Samples	1. The samples are independent 2. Conditions 1-3 above apply to **both** samples ***… I will use t procedures for the difference of means using n – 1 degrees of freedom for the smallest sample size***

PROPORTIONS (*z*)	
One Sample	1. Random sample or randomized experiment 2. $np_0 \geq 10$ and $n(1-p_0) \geq 10$ for hypothesis tests; $n\hat{p} \geq 10$ and $n(1-\hat{p}) \geq 10$ for confidence intervals 3. $N > 10n$ ***… I will use z procedures for a population proportion***
Two Independent Samples	1. Random samples or randomized experiment 2. $n_1\hat{p}_1 \geq 10, n_1(1-\hat{p}_1) \geq 10$ and $n_2\hat{p}_2 \geq 10, n_2(1-\hat{p}_2) \geq 10$ 3. $N_1 > 10n_1$ and $N_2 > 10n_2$ ***… I will use z procedures for the difference of two population proportions***

CATEGORICAL DATA/2-WAY TABLES (χ^2)	**SLOPE (*t*)**
1. Random sample(s) or randomized experiment 2. Data in counts where all **expected** counts are ≥ 5 ***… I will use Chi-square procedures for Goodness of Fit*** *(1 sample, 1 variable),* ***Association*** *(1 sample, 2 variables) or* ***Homogeneity*** *(2 samples, 2 variables)*	1. Random sample or randomized experiment 2. Evidence of a linear association with no pattern in residual plot 3. Errors (residuals) are normally distributed (boxplot, normal probability plot) ***… I will use t procedures for the slope of the regression line with n – 2 degrees of freedom where n = number of (x,y) pairs***