

Steps to Hypothesis Testing

1. Identify Population and Sample

Example:

Population: All GVSU students who enrolled in STA215 during WINTER 2018

Sample: 50 randomly selected students who enrolled in STA215 during WINTER 2018

2. State the Hypotheses in terms of population parameters

H_o – Null hypothesis, usually is the opposite of our research hypothesis. The null hypothesis always includes equality.

H_a – Alternative hypothesis, corresponds to our research hypothesis. Does not include equality.

H_o	\geq	\leq	$=$
H_a	$<$	$>$	\neq

Make sure you match the signs, so they are opposite of each other, unless your professor wants H_o to always have a “=”.

Example:

H_o : The mean number of GVSU students enrolled in STA215 during WINTER 2018 who speak English as a second language is 15

H_a : The mean number of GVSU students enrolled in STA215 during WINTER 2018 who speak English as a second language is not equal to 15

3. State Assumptions and Check Conditions

These are the conditions that need to be met in order for the hypothesis test to be performed. If the conditions are not met, then the results of the test are not valid.

4. Calculate the Test Statistic

The test statistic varies depending on the test performed, see statistical tests handouts for details.

5. Calculate the P-value

P-value = the probability of getting the observed test statistic or something more extreme when H_o is true. P-values can be found using a calculator or a table from the 215 *textbook Introductory Applied Statistics: A variable Approach*.

6. State the Conclusion

If $P\text{-value} > \alpha$ then fail to reject the null hypothesis.

“There is insufficient evidence to conclude [H_a in words]”

If $P\text{-value} < \alpha$ then reject the null hypothesis.

“There is sufficient evidence to conclude [H_a in words]”

Remember: Never accept H_a just reject H_o