

- I. Introduction
- II. Statistical and Notational Preliminaries
 - A. Introduction
 - B. Elements of Statistical Theory
 - 1. Prerequisites:
 - ❖ Random Variables
 - ❖ Distributions: Population vs. Sample
 - ❖ Descriptive Measures
 - ❖ Estimation
 - ❖ Sampling distributions.
 - ❖ Inference: CIs and Hypothesis Testing.

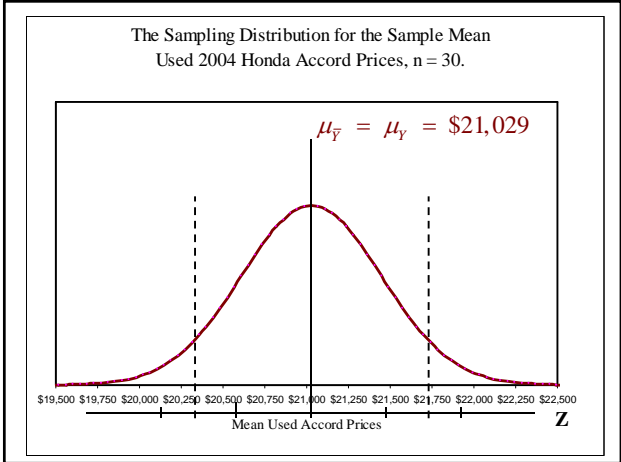
➤ **Hypothesis Testing - procedure.**

1. State the null (H_0) and alternative (H_a) hypotheses.
2. Choose the **Level of Significance**:
3. Determine the critical values. (Draw a picture of your test.)
4. Select a sample and estimate. Calculate your test statistic.
5. Compare – where does your test statistic fall?
6. Conclusion.

➤ **Hypothesis Test – Accord Prices.**

1. $H_0 =$; $H_a \neq$.
2. Level of Significance:
3. Determine the critical values:

4. Select a sample and estimate. Calculate your test statistic.
5. Compare – where does your test statistic fall?
6. Conclusion:



PR3 : You each have two sample means for *Used 2004 Accord Price* (n=30) drawn in lab. Complete Z-tests of the **true null hypothesis**. Use $\alpha = 0.10$. **What are your conclusions?**

1. Fail to reject H_0 for both samples.
2. Reject H_0 for one sample, FTR for the other.
3. Reject H_0 for both samples.

➤ **Hypothesis Test Decisions**

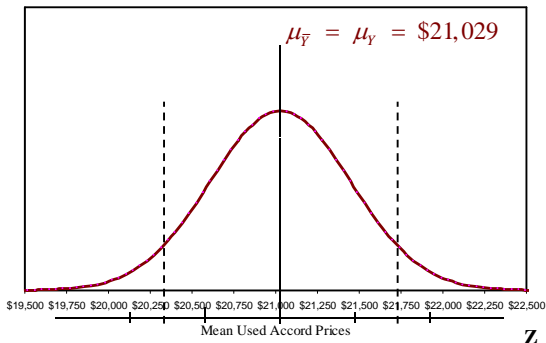
- All your decisions can be organized as follows:

Your decision:	The Null Hypothesis is:	
	True (Right)	False
Reject H_0		
Fail to Reject H_0		

➤ **Type I Error**

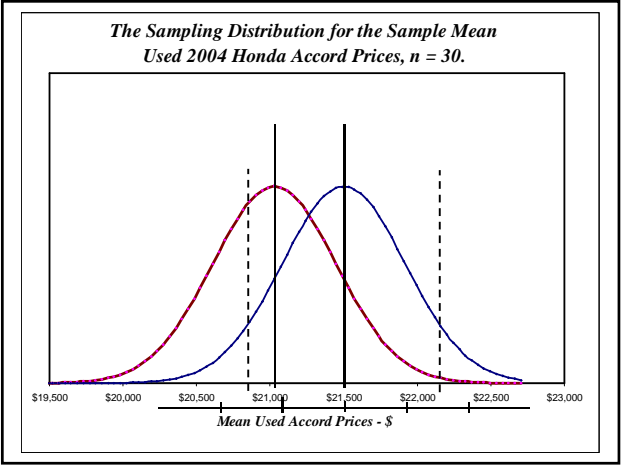
- Given our hypothesis, prior to sampling, what was the chance you would make a Type I Error?

The Sampling Distribution for the Sample Mean
Used 2004 Honda Accord Prices, n = 30.



➤ **Type II Errors**

- The null hypothesis is false, but you fail to reject it.
- Illustrate. Our guess about the sampling distribution is centered in the wrong place.
- What is the probability that we make an error?



- **Type II Errors**
 - We've drawn the picture. Which distribution is the true sampling distribution?
 - What area do you shade to illustrate the probability of a Type II Error.
