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.

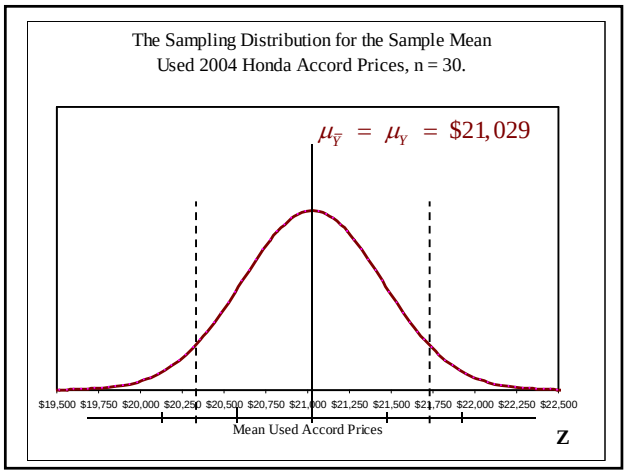
Hypothesis Test Decisions

- All your decisions can be organized as follows:

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

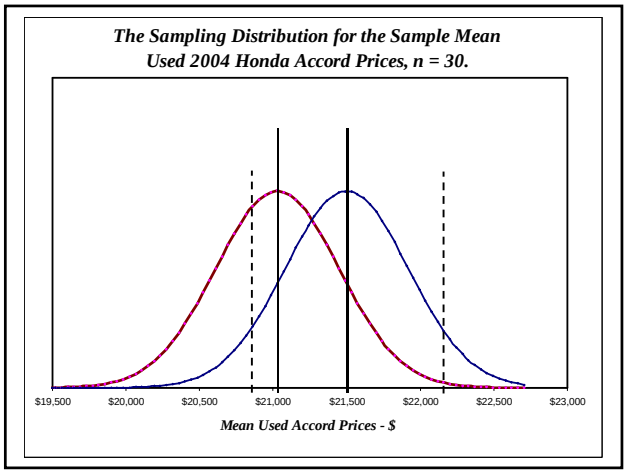
Type I Error

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



➢ 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.

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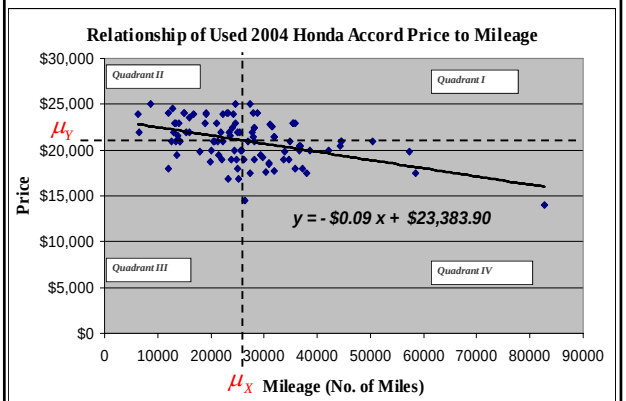
  A. Introduction
  B. Elements of Statistical Theory
    1. Prerequisites: Summarizing distributions, point estimation, interval estimation, hypothesis testing.
    2. Bivariate measures: covariance and correlation.
    3. Estimators and Desirable Properties
    4. Expected Values.

2. Bivariate Measures: Covariance & Correlation

a. Covariance – measure of linear association.

- ✓ Formula:
- ✓ Possible Values:
- ✓ Magnitude: depends on units.



b. ***Correlation Coefficients***

- Covariance suffers from a problem – units.
- ***Correlation***: *standardize* …

- No units – a ***pure number***.
- Measures ***strength of association***: