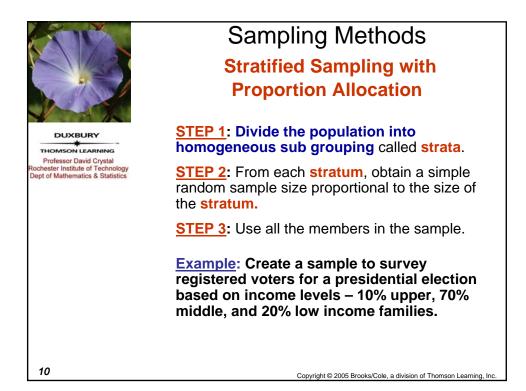
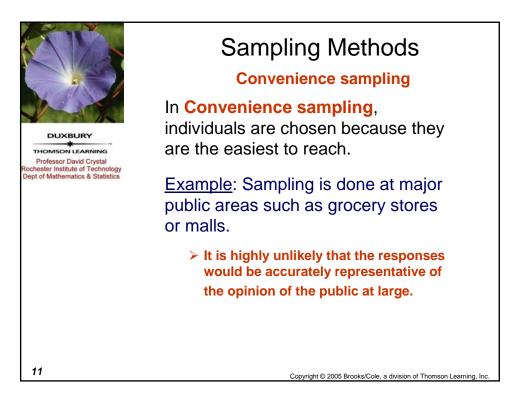
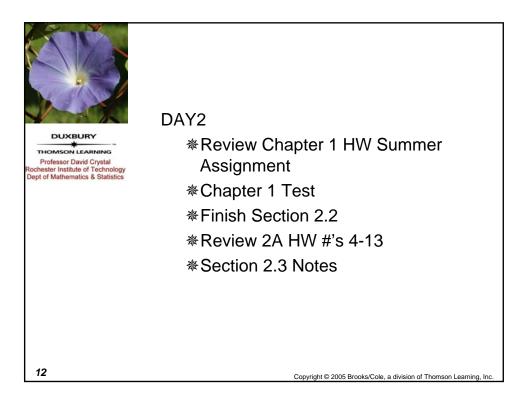
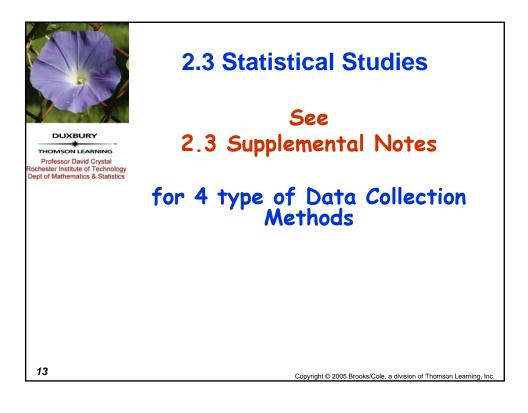


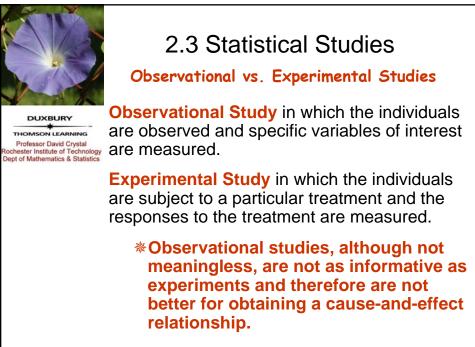
	Sampling Methods
	Cluster sampling
	STEP 1: Identify clusters (heterogeneous subgroups of a population).
THOMSON LEARNING Professor David Crystal Rochester Institute of Technology Dept of Mathematics & Statistics	STEP 2: Obtain a simple random sample of each clusters.
	STEP 3: Use all the clusters as the sample.
	Example : In a large university, a professor wants to find out about student attitudes ,randomly selects a number of classes to survey and he includes all the students in those classes. [note, the classes are the clusters.]
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Observational Studies

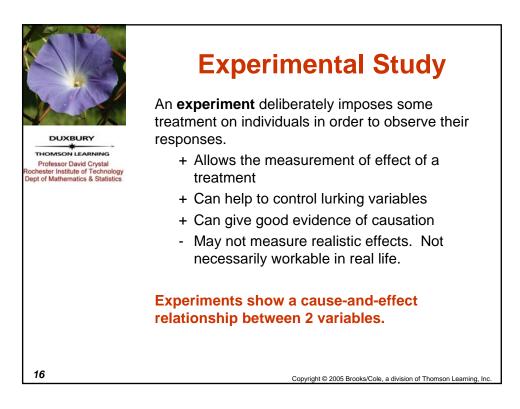
An **observational study** observes individuals and measures variables of interest but does not attempt to influence the responses.

- Difficult to measure or gauge the effect of an action or procedure
- Lurking variables are uncontrolled so the study may be confounded
- + Can use available data

Observational studies are used to draw general conclusions about populations; a direct causeand-effect relationship can NOT be determined.

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THOMSON LEARNING Professor David Crystal Rochester Institute of Technology Dept of Mathematics & Statistics *Finish Chapter 2 Notes*Review 2A HW #'s 14+

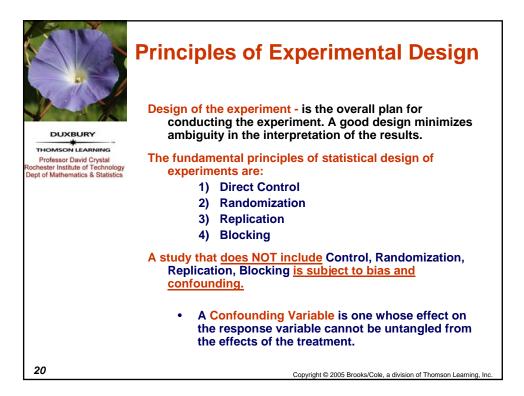
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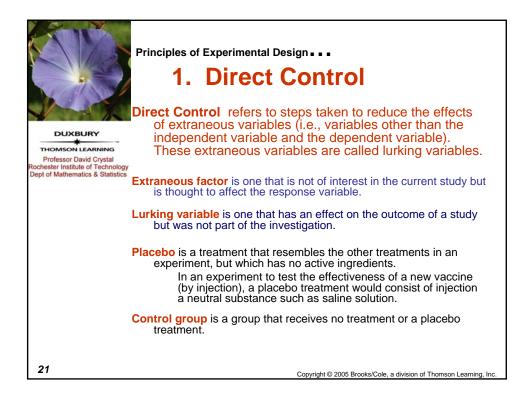
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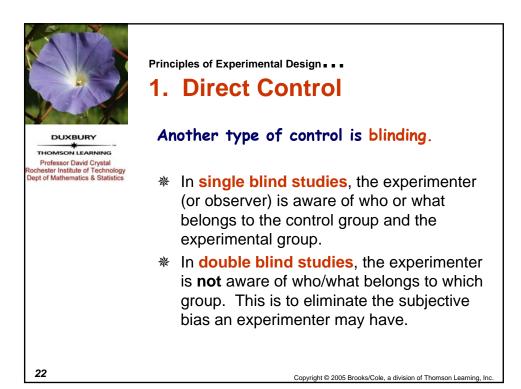
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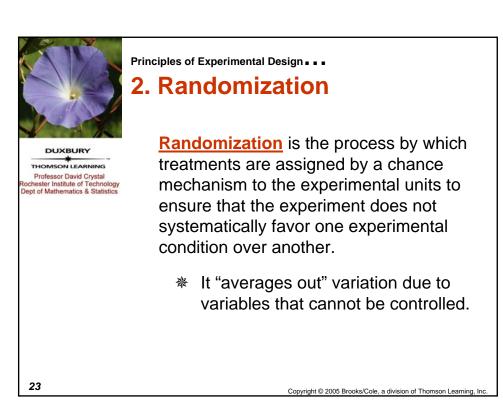
2.4 to 2.7 Survey Design Parts of an Experiment In an experiment, a researcher manipulates one or more variables, while holding all other variables constant. By noting how the manipulated variables affect a response variable, the researcher can test whether a causal relationship exists between the manipulated variables and the response variable DUXBURY THOMSON LEARNING Experimental Units (or Subjects) - the individuals in the Professor David Crystal ochester Institute of Technology Dept of Mathematics & Statistics experiment. **Response Variable** measures the outcome that have been observed. Treatments - the specific condition that is applied to the experimental units Factors - one or more explanatory variables in an experiment. Each factor has 1 or more levels (different quantities or categories of the factor). Combinations of different levels of factors are the * treatments. **Explanatory Variables -** explains the **response variable** applied to the **experimental units.** 18 Copyright © 2005 Brooks/Cole, a division of Thomson Learning, Inc

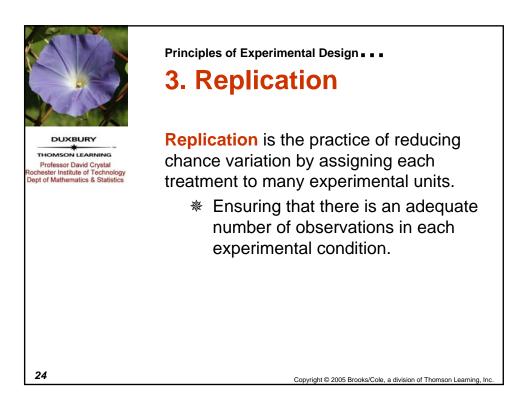
	Parts of an Experiment In a hypothetical experiment, the researcher is studying the possible effects of Vitamin C and Vitamin E on health.					
		0 mg	250 mg	500 mg		
Professor David Crystal Rochester Institute of Technology Vitamin E	0 mg	Treatment 1	Treatment 2	Treatment 3		
Dept of Mathematics & Statistics	400 mg	Treatment 4	Treatment 5	Treatment 6		
 <u>There are two factors</u> - dosage of Vitamin C & dosage of Vitamin E. The Vitamin C factor has three levels - 0, 250 and 500 mg per day. The Vitamin E factor has 2 levels - 0 and 400 mg per day. <u>The experiment has six treatments</u> <u>•The independent variable (the factor</u>) is an explanatory variable manipulated by the experimenter. The recipients of experimental treatments are the <u>experimental units</u> . And selected based on sampling methods previously discussed. •The researcher is looking at the effect of vitamins on health. <u>The dependent variable</u> in this experiment would be some measure of health (annual doctor bills, number of colds caught in a year, number of days hospitalized, etc.).						
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THOMSON LEARNING Professor David Crystal Rochester Institute of Technology Dept of Mathematics & Statistics Principles of Experimental Design

4. Blocking

Blocking using extraneous factors to create groups (blocks) that are similar. All experimental conditions are then tried in each block.

Do not confusing blocking and stratification. They perform similar functions, but blocks are part of the experimental design and strata are part of a sampling process.

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