



# Monday, November 5, 2018



- Warm-up

- A manufacturer of boots plans to conduct an experiment to compare a new method of waterproofing to the current method. The appearance of the boots is not changed by either method. The company recruits 100 volunteers in Seattle, where it rains frequently, to wear the boots as they normally would for 6 months. At the end of the 6 months, the boots will be returned to the company to be evaluated for water damage.
  - Describe a design for this experiment that uses the 100 volunteers. Include a few sentences on how it would be implemented.
  - Could your design be double-blind? Explain.

- Blocking Dogs – Day 2





# Objectives



- Content Objective: I will review experimental design including the concept of blocking.
- Social Objective: I will participate in the class activity and discussions.
- Language Objective: I will use correct vocabulary in my writing and speaking especially using terms blocking, experimental design, treatments, and response.





# Blocking Dogs...

A set of 24 dogs (6 of each of 4 breeds, each attending 1 of 4 veterinary clinics) has been randomly selected from a population of dogs older than 8 years of age whose owners have given consent for their inclusion in a study. The purpose of this study is to determine (a) whether there are different changes in bone density over the year of the study for dogs in three treatment groups and, if so, (b) how much each treatment influences that change in bone density.

Each dog will be assigned to exactly one of three treatments. Group “Ca” will receive a dietary supplement of calcium, Group “Ex” will receive a dietary supplement of calcium and a daily exercise regimen, and Group “Co” will be a control group that receives no supplement to their ordinary diet and no additional exercise. All dogs will be given a bone density evaluation at the beginning and end of the one-year study. Bone density is measured in Hounsfield units – positive values indicate an increase in bone density and negative values represent a decrease.





# The simulation



We will simulate three possible design scenarios for this study – Completing Randomized Design, Blocked by Breed, and Blocked by Clinic. Throughout the course of this simulation YOU will be playing a particular dog who will be assigned to a treatment.

Your breed and clinic will not change as we switch design. However, your treatment may change. Your job is to calculate your change in bone density as a response to your given treatment under each design.

My job is to act as the researcher and randomly assign treatments under each design.

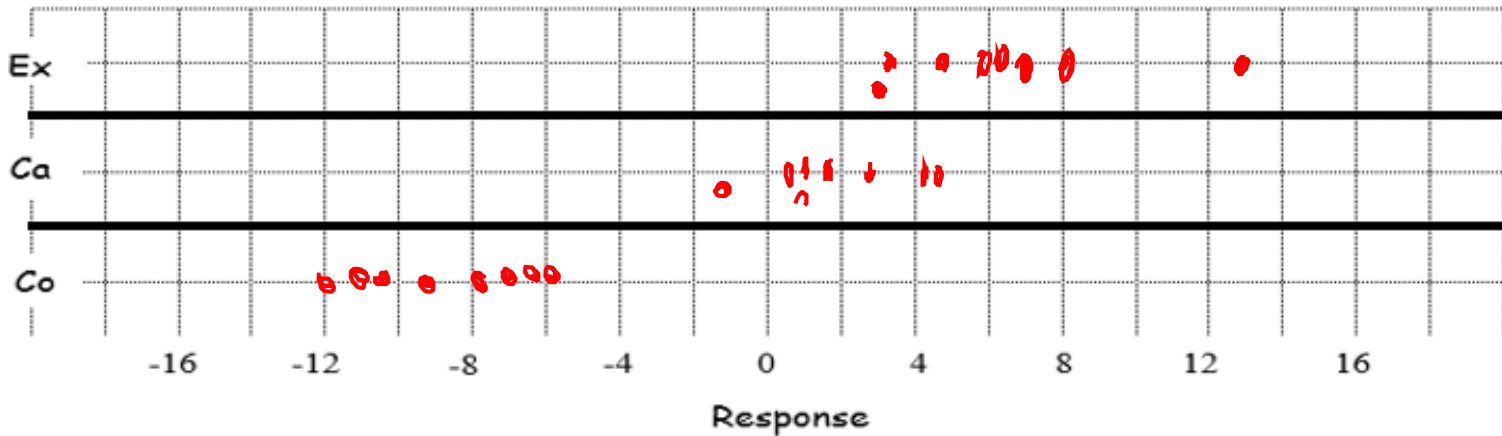


# By Breed



		<u>Akitas</u>		Beagles		Collies		<u>Dalmations</u>	
Raw Data	Ex	-101.8	-100.3	-85.5	-94.6	-67.2	-65.4	-136.9	-136.1
	Ca	-103.8	-104.9	-92.9	-95.1	-68.9	-72.1	-141.8	-143.8
	Co	-112.1	-111.7	-108.8	-109.8	-82.8	-84.1	-149.7	-148.6
Breed Averages		-105.7		-97.8		-73.4		-142.8	
Data with breed variability removed		3.9	5.4	12.8	3.2	6.2	8	5.9	6.7
		1.9	0.8	4.9	2.7	4.5	1.3	1	-1
		-6.4	-5.9	-12	-11	-9.4	-10.7	-6.9	-5.8

Treatment





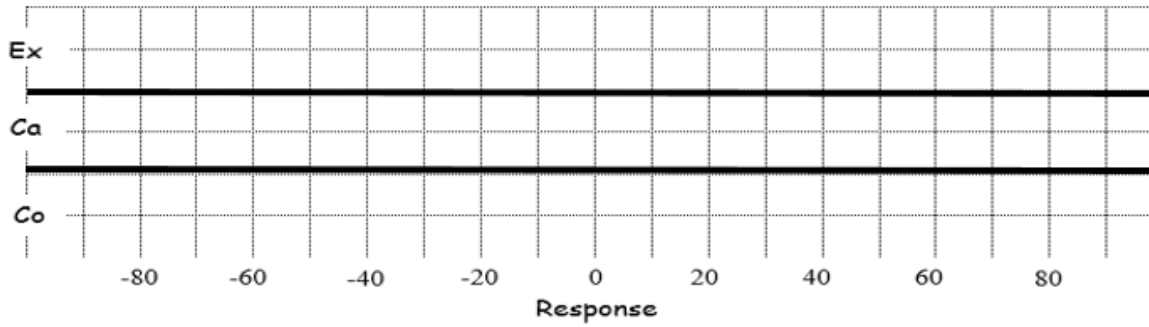
# By Clinic



		Paw Prince	Pooch Palace	Treehouse	Barking Lot
Raw Data	Ex				
	Ca				
	Co				
Clinic Averages					
Data with breed variability removed	Ex				
	Ca				
	Co				

Complete three dotplots below, one for each treatment.

**Treatment**





# Homework



- p 316 (46-47)

