ENS 495 Fall 2017

Assignment 2: Chapters 1

Name: _____

Discussion among students is encouraged but all answers must be written in your own words. Points will be deducted if you answers are identical to other students.

Ch 1: Statistics and Samples

Ch 1 # 17	a	What is population of interest: CALIFORNIAN Pinon pine trees
	b	B/c they randomly sampled PLOTS within the range, so their unit of measurement was the plot, not the tree. If they had randomly sampled trees from throughout the range (basically an impossible task) then they would average the size of the individual trees for their final estimate. This issue here is mostly about the way the sample was taken and the independence of trees w/in the same plot; precisions is a secondary issue, though the approach the authors used will yield better results than if they had sampled 500 trees (somehow) from throughout the entire range instead of 500 plots.

			If numeric: / If categorical:
Ch 1 #14	a	**numerical** / categorical	**discrete** / continous // ordinal / nominal
	b	**numerical** / categorical	discrete / **continuous** // ordinal / nominal
	c	**numerical** / categorical	discrete / **continuous** // ordinal / nominal
	d	**numerical** / categorical	discrete / **continuous** // ordinal / nominal
	e	numerical / **categorical**	discrete / continuous // **ordinal** / nominal
	f	**numerical** / categorical	discrete / **continuous** // ordinal / nominal
	g	numerical / **categorical**	discrete / continuous // ordinal / **nominal**
	h	**numerical** / **categorical**	**discrete** / continuous // ordinal / nominal
	i	numerical / **categorical**	discrete / continuous // ordinal / **nominal**

		Question 19	Question 20
Ch 1 #19 & #20	a	answer key not set up correctly	**experimental** / observational
	b		**experimental** / observational
	c		experimental / **observational**
	d		**experimental** / observational

Ch 1 #21		Is is a random sample? Yes / **No** Why or Why not: repeated measurements on same birds; measurements are not independent of each

	other; response later in the experiment can depend on what happened earlier in the experiment. (INCORRECT: a) b/c it was non-experimental; b) b/c it was only 1 species. For b), the issue of the spp used relates to the population that the study relates back to. Random sampling has to do with how samples obtained from the study popluation, however it happens to get defined)

Name: _____

Ch 1 #22	**Key term: VOLUNTEER BIAS**; Rate of smoking would have been UNDERestimated (gave full credit for just "bias", but "VOLUNTEER" is key to this situation. Non-smokers are essentially volunteering for the study at a faster rate, though smokers eventually do volunteer too; "sample of convience" might be an appropriate concept also) (Gave full credit if "skewed" was used but this is not the appropirate term, but is right idea) Ex."If the study had ended sooner, there would have been a vol. bias, preventing full representatio of the pop. and making it appear that fewer vets. Smoked than in reality" (Taylor 2016) [Note: the issue of scientific s interest isn't the response time; that is a **CONFOUDNING VARIABLE**]

Ch 1 # 23	What is main problem?: **Biased sampling** / Large sampling error What part should be reinforced: **cockpit and engine** [The sample is biased b/c if a plane got hit in the cokcpit or the engines, it didn't make it back size of wings not relevant]

MS study

Ch 1 #25	a	Explanatory = ___CCSVI [the vein condition]
		Response = ___MS_[binary variable - does patient have MS yes/no]
	b	Experimental / **Observational**

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NOTES NOTES NOTES NOTES

Ch 1: Statistics and Samples

Ch 1 # 17	a	
	b	Partial credit: + + = blocked + = account for variation, "more accurate" - reduce the amount of data, making it easier to process

Ch 1 #14	a	
	b	petal area; some people put cat - prob. thinking flowering vs. non-flowering
	c	heart beats AVERAGED; some people put discrete
	d	birth weigth
	e	stage of fruit ripeness
	f	angle of flower wrt sun
	g	tree spp
	h	year of birth: if categorical, then = ordinal
	i	geneder

Ch 1	a
#19 & #20	b
	c
	d

Ch 1 #21	10 Randomly selected seabirds subjected to six artificial dives. Original question: "In a study of heart rate in ocean-diving birds, researchers harnessed 10 randomly sampled, wild-caught cormorants to a lab contrapaction that monitored

vital signs. Each cormorant was subjected to 6 artificial dives over the following week (1 per day). A dive consisted of rapidly immersing the head of teh bird in the water by tipping the harness. In this way, a sample of 60 measurements of heart rate in diving birds was obtained. Do these 60 measurements represent a random sample? Why or why not?"

Name: _____

Ch 1

#22

Ch 1

23

Bomber problem

Ch 1 a

#25

b

Some people say the response is the "association btwn MS and CCSVI"; the response ***is*** MS; there are control subjects w/o MS so they have no assoc. Others include "patients" in the answer; patients are the sample, not the variable. It's the qualities of the patients (MS, no MS; CCSVI, no CCSVI) that are the variables)