Statistics 300 **Summer 2007**
Quiz #2 **5:30-7:50 p.m.** **Name:** Solution

(6 points, 5 minutes)

1. **Circle the correct sampling plan for each situation,**

a. **A report says, "A random sample of SUV owners in the U.S.A. was surveyed by visiting rest stops along the interstate highways in all 50 states. A total of 4223 SUV owners agreed to answer our questions.**

(Simple) Random	Systemmatic
Stratified (Random)	Cluster
Convenience	Census

b. **A report says, "A sample of SUV owners in the U.S.A. was selected from vehicle registration records in each of the 50 states. In each state, a random sample of 100 SUV owners was selected."**

(Simple) Random	Systemmatic
Stratified (Random)	Cluster
Convenience	Census

c. **A report says, "A random sample of 4223 SUV owners in the U.S.A. was surveyed. Analysis of primary drivers found that 1392 were women over 40, 2058 were women 40 and under, 490 were men over 40 and 283 were men 40 and under."**

(Simple) Random	Systemmatic
Stratified (Random)	Cluster
Convenience	Census

d. **A report says, "At Yosemite National Park, the numbers of visitors that arrive in SUVs was estimated by stopping the first SUV entering the park each hour during daylight hours and counting the number of people in the vehicle."**

(Simple) Random	Systemmatic
Stratified (Random)	Cluster
Convenience	Census

e. **A report says, "At Yosemite National Park, the favorite activities of people in SUVs was studied by stopping randomly selected SUVs as they entered the park and asking all of the vehicle occupants which activities they like the best."**

(Simple) Random	Systemmatic
Stratified (Random)	Cluster
Convenience	Census

f. **A report says, "All mobile home parks in the city were studied and all of the vehicles belonging to owners of the mobile homes were examined. The study shows that 38% of all the vehicles were SUVs.**

(Simple) Random	Systemmatic
Stratified (Random)	Cluster
Convenience	Census

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(8 points, 6 minutes)

2. **For each of the underlined segments in the situation below, select the appropriate statistical term from the list provided and write it in the blank next to the description or situation. Choose the term that is best connected to *the underlined text* in the description or situation.**

Terms:	1. randomization	5. placebo
	2. replication	6. block
	3. confounding	7. experimental unit
	4. blinding	8. treatment

(a). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physical effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Experimental Unit

(b). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Treatments

(c). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Blocks

(d). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Blinding

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2. (continued)
For each of the underlined segments in the situations below, select the appropriate statistical term from the list provided and write it in the blank next to the description or situation. Choose the term that is best connected to *the underlined text* in the description or situation.

Terms:	1. randomization	5. placebo
	2. replication	6. block
	3. confounding	7. experimental unit
	4. blinding	8. treatment

(e). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Confounding

(f). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Replication

(g). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Placebo

(h). A study included 400 men and 400 women. In each gender group, 200 were given anti-oxidants and 200 were given a fake medication that has no physucal effect. Each man and each woman (and those working in the study) did not know which medication he or she was taking. Although age might have affected the responses, no effort was made to control for that factor. Medications were associated with subjects (men and women) by a procedure that ensured that each subject would have an equal chance of getting each medication.

Randomization

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(9 points : 8 minutes)

3. (a) Complete the columns in the "Frequency Distribution" table using the data values given below.

Frequency Distribution

Boundaries

width

Class Limits Lower	Class Limits Upper	Tally	Frequency	Relative Frequency	Cumulative Frequency	Cumulative Relative Frequency
1.1	1.5	I	1	$1/9 = 0.\overline{111}$	1	$1/9$
1.6	2.0	III	3	$3/9 = 0.\overline{333}$	4	$4/9$
2.1	2.5	III	3	$3/9 = 0.\overline{333}$	7	$7/9$
2.6	3.0	II	2	$2/9 = 0.\overline{222}$	9	$9/9$

$0.5 < 1.55$

$0.5 < 2.05$

$0.5 < 2.55$

Data: ~~2.82~~ ~~2.46~~ ~~1.94~~ ~~2.08~~ ~~1.52~~ ~~1.78~~ ~~2.51~~ ~~2.79~~ ~~2.02~~ $n = 9$

(b) The value of the class width = 0.5

(c) The lower class limit for class 2 = 1.6

(d) The upper class limit for class 4 = 3.0

(e) The boundary between class 3 and class 4 = 2.55