419 Homework 5

Problem 1

a. Cluster sampling as the population has been divided into clusters which is 40 blocks. A common sampling bias here could be no response bias as it's possible that some residents are not in the households

b.) Stratified sampling -> The entire population i.e the entire cornfield is stratified into 25 one Acre plots & then a random sample is picked from each. Lack of control could be a source of sampling bias here

c.) Systematic sampling as there is a system of intervals being involved in this technique. And No response bias could be a potential bias in this study

d.) Convenience Sampling -> where the friend group is a sample from the entire population and each member of the sample has an equal chance of being selected The students specifically chose their friends hence there is a lack of Randomization. No-response bias is also possible

e.) Simple random Sampling -> Ten seats are randomly chosen and every member from the sample is selected

Problem 2:

a) No because a sample of 500 students is not a big enough sample especially if it is a big university. Simple Random Sample potentially could be a valid technique if the sample chose is slightly bigger

b) Different field of study could be of different sizes and 10% does not provide fair opportunity for everyone to be selected. May be assess the different sizes of the different fields and then assign different proportions for each field of study to be surveyed to minimize the bias

c.) In my opinion this is a better approach because ages in university do not vary by alot in universities and also there is a fair amount of randomization when it comes to what classes should be selected.

Problem 3

Class	Midpoint	Frequency	Rel. Freq	Cumu. freq
0 - 90	45	19	0.38	19
90 - 180	135	15	0.3	34
180 - 270	225	8	0.16	42
270 - 360	235	5	0.10	47
360 - 450	335	3	0.06	50

9.7 Homework 6 Adam Khaderbhai

a.) Since the x-axis is the midpoint of class interval: 300, 350, 400 ....

$$\frac{300+350}{2} = \frac{650}{2} = 325$$

$$325 - 300 = 25$$

Class width is 25

Class	Midpoint	Freq	Rel. freq	Cumu. freq
$275 \leq x < 325$	300	6	0.24	6
$325 \leq x < 375$	350	3	0.12	9
$375 \leq x < 425$	400	8	0.32	17
$425 \leq x < 475$	450	6	0.24	23
$475 \leq x < 525$	500	2	0.08	25
		25		

b.) 25 people

c.) Greatest Frequency = $375 \leq x < 425$
Least Frequency = $475 \leq x < 525$

Greatest Rel. freq = 0.32
least Rel freq = 0.08

d.) $325 \leq x < 425 = 8 + 3 = 11$ students
11 students

Problem 2

a.) Total Sample size is 100 lemurs

b.) For an O-give. Two extra points are added on each end to form a polygon. From the graph we can say that there are four actual data points so 60, 65, 70 and 75. The upper bound of a previous interval is the lower bound of the next interval. Since an Ogive uses upper bounds to infer the cumulative frequencies.

I can pick two consecutive upper bounds e.g

60 & 65 -> These are both upper bounds. and 60 is the lower bound of the interval

$60 \leq x < 65$. We can say that the Class width is 5

Class boundaries.

$55 \leq x < 60$

$60 \leq x < 65$

$65 \leq x < 70$

$70 \leq x < 75$

$75 \leq x < 80$

c.) In an Ogive class with the highest frequency is represented by a steep raise from our Ogive a steep raise is seen in the range $65 \leq x < 70$

d.) Approximately 13

e.) $\simeq 24$ as $\simeq 76$ lemurs have a tail length of 70

f.) $\simeq 76 - 13$
$\simeq 63$ lemurs have tail length

Problem 3

a.) A plot of symmetric distribution as it looks roughly the same on left and right. Also the plot roughly looks like a bell shape curve

b.) A plot of assymetric distribution. It is right skewed. The tail of the data extends further to the right of the center of distribution then to the left

c.) A plot of assymetric distribution. It is left skewed. The tail of the data extends from the left of the center of distribution