Sampling Methods

Stratified Sampling

Stratified Sampling allows us to take a random sample that represents the population accurately

To calculate the number needed for each strata sample:

$$\frac{\textit{Strata Total}}{\textit{Grand Total}} \text{ X Sample Size}$$

Due to ***rounding errors*** the total of the strata samples may be slightly different to the original sample total

The Pros and Cons

✓A type of random sampling

✓The sample will be representative of the population

X Can be time consuming / expensive

X May not be possible to have full knowledge of the population in advance

What the examiners need to see

A) Calculate the number to be sampled for each strata (actually do this!)

1) Number the units from 1-n in the first strata
2) Choose random numbers from a random number generator
3) Ignore any repeats and numbers > n
4) Continue until x numbers obtained and choose the corresponding units from the strata

B) Repeat this for each strata

For each of the following tables, calculate the number to be sampled in each strata for a total sample of 100

Department	Management	Sales	Technical	Production	
Employees	18	217	131	234	
Sample Size					

Year	7	8	9	10	11	
Students	158	213	213	280	140	
Sample Size						

Age	0-6 months	6-12 months	1-2 years	2-3 years	3-4 years	
Girls	53	54	59	56	62	
Sample Size						
Boys	53	60	57	62	56	
Sample Size						

For the following Stratified sample, number the steps 1-6 so that they read in the correct order for taking the sample

	Select random numbers using a RNG
	Ignore repeats and numbers greater than 52
	Calculate the number of hoses to be sampled from each street
	Choose the corresponding houses from the first street
	Repeat for all of the other streets
	Number the houses from the first street from 1-52

Solutions

Department	Management	Sales	Technical	Production	Total
Employees	18	217	131	234	600
Sample Size	3	36	22	39	100

Year	7	8	9	10	11	Total
Students	158	213	213	280	140	1004
Sample Size	16	21	21	28	14	100

Age	0-6 months	6-12 months	1-2 years	2-3 years	3-4 years	T
Girls	53	54	59	56	62	
Sample Size	9	9	10	10	11	
Boys	53	60	57	62	56	
Sample Size	9	11	10	11	10	571

For the following Stratified sample, number the steps 1-6 so that they read in the correct order for taking the sample

3	Select random numbers using a RNG
4	Ignore repeats and numbers greater than 52
1	Calculate the number of hoses to be sampled from each street
5	Choose the corresponding houses from the first street
6	Repeat for all of the other streets
2	Number the houses from the first street from 1-52