

I. 1. Random sampling: list employee population and randomly select a sample of 300 from it. Problem: no guarantee that the sample will include or be proportionate to employees from all departments

2. Systematic sampling: a) the skip interval is population/sample, therefore $5000/600=8.3$

The first case would be selected randomly, then every 8th case forward and backward until 600 cases are selected.

b) This procedure violates the independence of selections, because selections are reliant on previous selections, and representability of the characteristics, because there is no guarantee the sample will include cases from all departments

3. Stratified proportionate random sampling: a)

strata	Population	Proportions	Proportionate sample
Blue collar	2500	0.50	300
White collar	1600	0.32	192
executive	900	0.18	108
total	5000	1.00	600

b) Stratified proportionate random sampling respects all five rules of sampling.

4.

strata	Proportionate sample	N. of unsatisfied in sample	Estimated % of opposition in total population
Blue collar	300	109	36.3%
White collar	192	86	44.8%
executive	108	77	71.3%
total	600	272	45.3%

II.

Level	Female	Male	All
Undergraduate	11718	10778	22496
- Full-time	5996	6021	12017
- Part-time	5722	4757	10479
Graduate	1518	1921	3439
- Full-time	859	1186	2045
- Part-time	659	735	1394
Total students	13236	12699	25935

Level	Population	Proportion	Proportionate sample
Undergrad	22496	0.87	1740
Grad	3439	0.13	260
Total	25935	1.00	2000

Undergrad

Part time/Full time	Population	Proportion	Proportionate sample
Part time	12017	0.53	922
Full time	10479	0.47	818
Total	22496	1.00	1740

Grad

Part time/Full time	population	proportion	Proportionate sample
Part time	1394	0.40	104
Full time	2045	0.60	156
Total	3439	1.00	260

Undergrad: Part time: M/F

male/female	Population	Proportion	Proportionate sample
Male	4757	0.45	415
Female	5722	0.55	507
Total	10479	1.00	922

Undergrad: Full time: M/F

male/female	Population	Proportion	Proportionate sample
Male	6021	0.50	409
Female	5996	0.50	409
Total	12017	1.00	818

Grad: Part time: M/F

male/female	population	proportion	Proportionate sample
Male	735	0.53	55
Female	659	0.47	49
Total	1394	1.00	104

Grad: Full time: M/F

male/female	population	proportion	Proportionate sample
Male	1186	0.58	90
Female	859	0.42	66
Total	2045	1.00	156

By dividing the sample into each characteristic and then randomly selecting the proportionate sample from each, everyone in the population has equal chance of being selected, the probability of each selection is calculable, selections are independent of each other, the size of the sample is acceptable, and the sample reflects the characteristics of the population.

