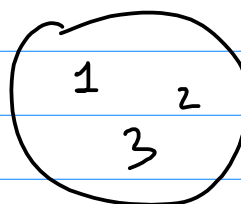
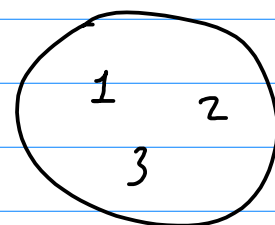
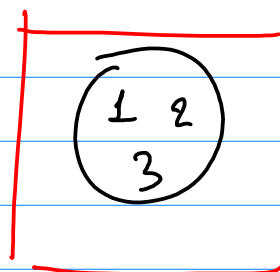
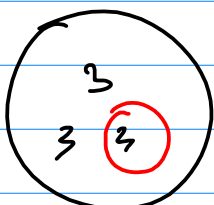
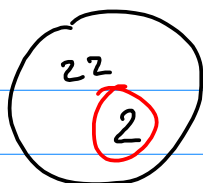
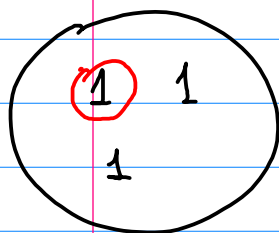


Q1) 1) Stratified

Cluster



2)  $\{x_1, \dots, x_N\}$

$$x_i = \begin{cases} 0 & 1-\pi \\ 1 & \pi \end{cases}$$

$$\hat{\pi} = \frac{\sum x_i}{N}$$

$$x_i \sim \text{Be}(\pi),$$

iid

$$\hat{\pi} = \bar{X} \sim N\left(\pi, \frac{\pi(1-\pi)}{n}\right)$$

⊛  $\bar{X} \sim N\left(\mu, \frac{\sigma^2}{n}\right)$

$$100 \pm 25$$

ME

$$(1-\alpha) \% \text{ CI} \quad \left\{ \hat{\pi} \pm z_{\alpha/2} \cdot \text{SE}(\hat{\pi}) \right\}$$

||

$$\sqrt{\frac{\hat{\pi}(1-\hat{\pi})}{n}}$$

e

$$z_{\alpha/2} \cdot \sqrt{\frac{\hat{\pi} \cdot (1-\hat{\pi})}{n}} \leq e$$

$$n \geq \frac{z_{\alpha/2}^2 \cdot \hat{\pi}(1-\hat{\pi})}{e^2}$$

3)  $Q_i$  - qualifying factors

$$\text{IR : Incidence rate} = \prod_{i=1}^c Q_i$$

$c_p$  : Completion rate - % of qualified resp. to complete

4B)

$$n_{IN} \geq \frac{\text{Sample Size}^G}{IR \cdot CR}$$

Good Sample = Sample Size Init.  $IR \cdot CR$

4A)

Inf. Sample

$$P_1^R = 1/3$$

$$P_2^R = 1/3$$

finite sample

$\{R, G, Y\}$

$$P_1^R = 1/3$$

$$P_2^R = 0$$

$$\delta_{\bar{x}} = \frac{\delta}{\sqrt{n}} \cdot \sqrt{\frac{N-n}{N-1}}$$

$$n \geq 0,1N$$