Sampling of $\bar{X}$ (Page 86-87)

1. $Mean\ (\bar{X}) = \mu$
2. $Variance\ (\bar{X}) = \frac{\sigma^2}{n}$
3. $Standard\ error(standard\ deviation)(\bar{X}) = \sqrt{Variance\ (\bar{X})} = \frac{\sigma}{\sqrt{n}}$
4. Distribution of $\bar{X}\ is$

   (a) If X is normal , then $\bar{X} \approx Normal\ (\mu, \frac{\sigma^2}{n})$

   (b) If X not normal , then $\bar{X} \approx Normal\ (\mu, \frac{\sigma^2}{n})$:

   By central limit theorem.(n > 30)

5. تحويل $\bar{X}$ to Z (لاستخدام الجداول في ايجاد الاحتمالات)

$$Z = \frac{\text{القيمة} - mean}{Standard\ error} = \frac{\bar{X} - \mu}{\sigma/\sqrt{n}}$$

How to use T-Table :

1) $t_{0.95}$= ? (df=10)

2) $t_{0.90}$ = ? (df =12)

3) $t_{0.05}$= ? (df=20)

4) $t_{0.10}$= ? (df=5)

طريقه اخرى لكتابة الاحتمال

1) P(T < K) =0.90, (df =5)

2) P(T ≥ K) =0.95, (df =15)

3) P(T ≤ 2.110)=? (df =17)

4) P(T ≤ 2.718)=? (df =11)

Sampling of $\bar{X}_1 - \bar{X}_2$ (Page 94 – 95)

1. $Mean\ (\bar{X}_1 - \bar{X}_2) = \mu_1 - \mu_2$

2. $Variance\ (\bar{X}_1 - \bar{X}_2) = \frac{{\sigma_1}^2}{n_1} + \frac{\sigma_2^2}{n_2}$

3. $Standard\ error (standard\ deviation)(\bar{X}_1 - \bar{X}_2) = \sqrt{Variance\ (\bar{X}_1 - \bar{X}_2)} = \sqrt{\frac{{\sigma_1}^2}{n_1} + \frac{\sigma_2^2}{n_2}}$

4. Distribution of $\bar{X}_1 - \bar{X}_2\ is$

$$\bar{X}_1 - \bar{X}_2 \approx Normal\ (\mu_1 - \mu_2, \frac{{\sigma_1}^2}{n_1} + \frac{\sigma_2^2}{n_2})$$

5. تحويل $\bar{X}_1 - \bar{X}_2$ to Z (لاستخدام الجداول في ايجاد الاحتمالات)

$$Z = \frac{\text{القيمة} - mean}{Standard\ error} = \frac{(\bar{X}_1 - \bar{X}_2) - mean}{Standard\ error}$$

Sampling of $\hat{P}$ (Page 97-98)

6. $Mean\left(\hat{P}\right) = P$
7. $Variance\left(\hat{P}\right) = \frac{pq}{n} \qquad (q = 1 - p)$
8. $Standard\ error(standard\ deviation)\left(\hat{P}\right) = \sqrt{Variance\left(\hat{P}\right)} = \sqrt{\frac{pq}{n}}$
9. Distribution of $\hat{P}\ is$: $\hat{P} \approx Normal\ (P, \frac{pq}{n})$
10. تحويل $\hat{P}$ to Z (لاستخدام الجداول في ايجاد الاحتمالات)

$$Z = \frac{\text{القيمة} - mean}{Standard\ error} = \frac{\hat{P} - P}{\sqrt{\frac{pq}{n}}}$$

Sampling of $\hat{P}_1 - \hat{P}_2$ (Page 100-101)

1. $Mean\left(\hat{P}_1 - \hat{P}_2\right) = P_1 - P_2$
2. $Variance\left(\hat{P}_1 - \hat{P}_2\right) = \frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2} \qquad (q_1 = 1 - p_2)$
3. $Standard\ error(standard\ deviation)\left(\hat{P}_1 - \hat{P}_2\right) =$

   $\sqrt{Variance\left(\hat{P}_1 - \hat{P}_2\right)} = \sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}$
4. Distribution of $\hat{P}_1 - \hat{P}_2\ is$: $\hat{P}_1 - \hat{P}_2 \approx Normal\ (P_1 - P_2, \frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2})$
5. تحويل $\hat{P}_1 - \hat{P}_2$ to Z (لاستخدام الجداول في ايجاد الاحتمالات)
6. $Z = \frac{\text{القيمة} - mean}{Standard\ error} = \frac{(\hat{P}_1 - \hat{P}_2) - (P_1 - P_2)}{\sqrt{\frac{p_1 q_1}{n_1} + \frac{p_2 q_2}{n_2}}}$