Ejercicios Uno

Nombre del alumno: *Marcela Pulido Tovar*

Nombre del tema: *Muestreo*

Módulo: *1*

Nombre de la Materia: *Estadística Inferencial*

Nombre del profesor: *Jorge Enrique Albores Aguilar*

Nombre de la Licenciatura: *Psicología*

Cuatrimestre: *4*

1.- En un municipio se pretende realizar una encuesta sobre la opinión de las personas realizar de un producto nuevo de limpieza, el cual cuenta con 45,000 amas de casa, por lo tanto, entrevistar a todas sería tedioso y costoso, por lo cual se ha tomado la decisión de obtener una muestra. No existen datos anteriores para estimar el valor de P I tra bájelo con error de estimación de 3%.

$n = ?$

$N = 45,000$

$P = 50\% = 0.5$

$q = 1-P = 1-0.5 = 0.5$

$B = 3\% = 0.03$

$$D = \frac{B^2}{4} = \frac{(0.03)^2}{4} = \frac{0.0009}{4} = 0.000225$$

$$n = \frac{NPq}{(N-1)D+Pq} = \frac{(45,000)(0.5)(0.5)}{(44,999)(0.000225)+(0.5)(0.5)}$$

$$n = 45000 \times 0.5 \times 0.5 = \div ((44999 \times 0.000225)+(0.5 \times 0.5))$$

$$n = 1,084.36 \cong 1,085$$

2.- En un municipio se pretende realizar una encuesta sobre la opinión de las personas de un producto de limpieza, el cual cuento con 20,000 amas de casa, por lo tanto, una encuesta llevada acabo el año pasado arrojo que el 72.5% de las personas están satisfechas con este producto. It bájelo con un error de estimación de 5%.

$n = ?$

$N = 20,000$

$P = 72.5\% = 0.725$

$q = P-1 = 0.725 - 1 = 0.275$

$B = 5\% = 0.05$

$$D = \frac{(0.05)^2}{4} = 0.000625$$

$$n = \frac{NPq}{(N-1)D+Pq} = \frac{(20,000)(0.725)(0.275)}{(19,999)(0.000625)+(0.725)(0.275)}$$

$$n = 20,000 \times 0.725 \times 0.275 = \div ((19,999 \times 0.000625)+(0.725 \times 0.275))$$

$$n = 314$$

3.- $N = 50,000$ $n =$

$P = 76\% = 0.76$

$9 = 1-P = 1-0.76 = 0.24$ $D = \dfrac{B^2}{4} = \dfrac{(0.04)^2}{4} = \dfrac{0.0016}{4} = 0.0004$

$B = 4\% = 0.04$

$n = \dfrac{NP9}{(N-1)D + P9} = \dfrac{(50,000)(0.76)(0.24)}{(49,999)(0.0004) + (0.76)(0.24)}$

$n = 50,000 \times 0.76 \times 0.24 = \div [(49,999 \times 0.0004) + (0.76 \times 0.24)]$

$n = 451.88 \cong 452$

4.- $N = 10,000$ $n =$

$P = 50\% = 0.5$

$9 = 1-P = 1-0.5 = 0.5$ $D = \dfrac{B^2 (0.05)^2}{4} = \dfrac{0.0025}{4} = 0.000625$

$B = 5\% = 0.05$

$n = \dfrac{(10,000)(0.5)(0.5)}{(9,999)(0.000625) + (0.5)(0.5)}$

$n = 10,000 \times 0.5 \times 0.5 = \div [(9,999 \times 0.000625) + (0.5 \times 0.5)]$

$n = 384.65 \cong 385$

5.- $N = 25,000$ $n =$

$P = 55\% = 0.55$

$9 = 1-P = 1-0.55 = 0.45$ $D = \dfrac{B^2}{4} = \dfrac{(0.02)^2}{4} = \dfrac{0.004}{4} = 0.0001$

$B = 2\% = 0.02$

$n = \dfrac{NP9}{(N-1)D + P9} = \dfrac{(25,000)(0.55)(0.45)}{(24,999)(0.0001) + (0.55)(0.45)}$

$n = 25,000 \times 0.55 \times 0.45 = \div [(24,999 \times 0.0001) + (0.55 \times 0.45)]$

$n = 2,232.19 \cong 2,253$

6.- $N = 15,000$

$n =$

$P = 66\% = 0.66$

$q = 1 - P = 0.66 - 1 = 0.34$

$B = 3\% = 0.03$

$D = \frac{B^2}{4} = \frac{(0.03)^2}{4} = \frac{0.0009}{4} = 0.000225$

$n = \frac{NPq}{(N-1)D + Pq} = \frac{(15,000)(0.66)(0.34)}{(14,999)(0.000225) + (0.66)(0.34)}$

$n = 15,000 \times 0.66 \times 0.34 = \div ((14,999 \times 0.000225) + (0.66 \times 0.34))$

$n = 938.21 \cong 936$

7.- $N = 250,000$

$P_1 = 65\% = 0.65$

$q_1 = 1 - P = 0.65 - 1 = 0.35$

$B_1 = 2\% = 0.02$

$n =$

$D = \frac{(0.02)^2}{4} \cdot \frac{0.0004}{4} = 0.0001$

$n = \frac{NPq}{(N-1)D + Pq} = \frac{(250,000)(0.65)(0.35)}{(249,999)(0.0001) + (0.65)(0.35)}$

$n = 250,000 \times 0.65 \times 0.35$

$= \div ((249,999 \times 0.0001) + (0.65 \times 0.35))$

$n = 2,254.49 \cong 2,255$

$P_2 = 50\% = 0.5$

$q_2 = 1 - P = 1 - 0.5 = 0.5$

$B_2 = 3\% = 0.03$

$n_2 =$

$D = \frac{B^2}{4} = \frac{(0.03)^2}{4} = \frac{0.0009}{4} = 0.000225$

$n = \frac{(250,000)(0.5)(0.5)}{(249,999)(0.000225) + (0.5)(0.5)}$

$n = 250,000 \times 0.5 \times 0.5$

$= \div ((249,999 \times 0.000225) + (0.5 \times 0.5))$

$n = 1,106.19 \cong 1,107$

8.- $N = 35,000$

$P_1 = 55\% = 0.55$

$q_1 = 1 - P = 1 - 0.55 = 0.45$

$B_1 = 5\% = 0.05$

$n_1 =$

$$D = \frac{B^2}{4} = \frac{(0.05)^2}{4} = \frac{0.0025}{4} = 0.000625$$

$$n = \frac{(35,000)(0.55)(0.45)}{(34,999)(0.000625) + (0.55)(0.45)}$$

$n = 35,000 \times 0.55 \times 0.45$

$= \div [(34,999 \times 0.000625) + (0.55 \times 0.45)]$

$n = 391.58 \cong 392$

$P_2 = 52\% = 0.52$

$q_2 = 1 - P = 1 - 0.52 = 0.48$

$B_2 = 3\% = 0.03$

$n_2 =$

$$D = \frac{B^2}{4} = \frac{(0.03)^2}{4} = \frac{0.0009}{4} = 0.000225$$

$$n = \frac{(35,000)(0.52)(0.48)}{(34,999)(0.000225) + (0.52)(0.48)}$$

$n = 35,000 \times 0.52 \times 0.48$

$= \div [(34,999 \times 0.000225) + (0.52 \times 0.48)]$

$n = 1,075.28 \cong 1,076$