

Fecha de entrega martes 27
de septiembre.



Pasión por educar.

Nombre: Luis Antonio Alfaro Pérez.

Maestro: Jorge Enrique Albores Aguilar.

Ejercicios de muestreo simple.

4 cuatrimestre

**Lic. En contaduría pública y
finanzas.**

1- En un municipio se pretende realizar una encuesta sobre la opinión de las personas de un producto nuevo de limpieza, el cual cuenta con 45,000 años de casa, por tanto, entrevistar 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 (trabásele con un error de estimación de 3%).

$$N = 45,000$$

$$P = 50\% = 0.5$$

$$Q = 1 - P = 1 - 0.5 = 0.5$$

$$B = 3\% = 0.03$$

$$n = 0.000225$$

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

$$45,000 \times 0.5 \times 0.5 = \frac{((44,999 \times 0.000225) + (0.5 \times 0.5))}{1,084.3 \approx 1,085}$$

2- En un municipio se pretende realizar una encuesta sobre la opinión de las personas de un producto de limpieza, el cual cuenta con 20,000 años de casa por lo tanto, una encuesta llevada a cabo el año pasado arrojó que el 72.5% de las personas están satisfechas con este producto (trabásele con un error de estimación de 5%).

$$N = 20,000$$

$$P = 72.5\% = 0.725$$

$$Q = 1 - P = 1 - 0.725 = 0.275$$

$$B = 5\% = 0.05$$

$$n = 0.000625$$

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

$$20,000 \times 0.725 \times 0.275 = \frac{((19,999 \times 0.000625) + (0.725 \times 0.275))}{314}$$

3-

$$N = 50,000$$

$$P = 76\% = 0.76$$

$$Q = 1 - P = 1 - 0.76 = 0.24$$

$$B = 4\% = 0.04$$

$$n = 0.0004$$

$$n = \frac{NPQ}{(N-1)D + PQ} = \frac{(50,000)(0.76)(0.24)}{(49,999)(0.0004) + (0.76 \times 0.24)}$$

$$50,000 \times 0.76 \times 0.24 = \frac{((49,999 \times 0.0004) + (0.76 \times 0.24))}{457.88 \approx 452}$$

$$N = 25,000$$

$$P = 55\% = 0.55$$

$$q = 1 - P = 1 - 0.55 = 0.45$$

$$B = 2\% = 0.02$$

$$n = 0.0001$$

$$\frac{n = NPq}{(N-1)D + Pq} = \frac{(25,000)(0.55)(0.45)}{(24,999)(0.0001) + (0.55 \times 0.45)}$$

$$25,000 \times 0.55 \times 0.45 = \frac{((24,999 \times 0.0001) + (0.55 \times 0.45))}{(0.55 \times 0.45)} = \boxed{2,252.12 \approx 2253}$$

$$N = 10,000$$

$$P = 50\% = 0.5$$

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

$$B = 5\% = 0.05$$

$$n = 0.000625$$

$$\frac{n = NPq}{(N-1)D + Pq} = \frac{(10,000)(0.5)(0.5)}{(9,999)(0.000625) + (0.5 \times 0.5)}$$

$$10,000 \times 0.5 \times 0.5 = \frac{((9,999 \times 0.000625) + (0.5 \times 0.5))}{(0.5 \times 0.5)} = \boxed{384.65 \approx 385}$$

$$N = 15,000$$

$$P = 66\% = 0.66$$

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

$$B = 3\% = 0.03$$

$$n = 0.000225$$

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

$$15,000 \times 0.66 \times 0.34 = \frac{((14,999 \times 0.000225) + (0.66 \times 0.34))}{(0.66 \times 0.34)} = \boxed{935.21 \approx 936}$$

$$N = 250,000$$

$$P_1 = 65\% = 0.65$$

$$q_1 = 1 - P_1 = 1 - 0.65 = 0.35$$

$$B_1 = 2\% = 0.02$$

$$n_1 = 0.0001$$

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

$$250,000 \times 0.65 \times 0.35 = \frac{((249,999 \times 0.0001) + (0.65 \times 0.35))}{(0.65 \times 0.35)} = \boxed{2,254.49 \approx 2255}$$

$$P_2 = 50\% = 0.5$$

$$q_2 = 1 - P_2 = 1 - 0.5 = 0.5$$

$$B_2 = 3\% = 0.03$$

$$n_2 = 0.000225$$

$$\frac{n = NPq}{(N-1)D + Pq} = \frac{(250,000)(0.5)(0.5)}{(249,999)(0.000225) + (0.5 \times 0.5)}$$

$$250,000 \times 0.5 \times 0.5 = \frac{((249,999 \times 0.000225) + (0.5 \times 0.5))}{(0.5 \times 0.5)} = \boxed{1,106.19 \approx 1,107}$$

$$N = 35,000 \quad n_1 = 0.000625$$

$$P_1 = 55\% = 0.55$$

$$q_1 = 1 - P_1 = 1 - 0.55 = 0.45$$

$$B_1 = 5\% = 0.05$$

$$P_2 = 52\% = 0.52$$

$$q_2 = 1 - 0.52 = 0.48$$

$$B_2 = 3\% = 0.03$$

$$n_2 = 0.000225$$

$$\frac{n = NPq}{(N-1)D + q} = \frac{(35,000)(0.55)(0.45)}{(34,999)(0.000625) + (0.55)(0.45)}$$

$$35,000 \times 0.55 \times 0.45 = \frac{2}{3}((34,999 \times 0.000625) + (0.55 \times 0.45)) = \boxed{391.58 \approx 392}$$

$$\frac{n = NPq}{(N-1)D + q} = \frac{(35,000)(0.52)(0.48)}{(34,999)(0.000225) + (0.52 \times 0.48)}$$

$$35,000 \times 0.52 \times 0.48 = \frac{2}{3}((34,999 \times 0.000225) + (0.52 \times 0.48)) = \boxed{1,075.28 \approx 1,076}$$