



# Mi Universidad

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*Nombre del tema : muestreos*

*Parcial : I*

*Nombre de la Materia: estadística inferencial*

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*Nombre de la Licenciatura: Administración y estrategias de negocios*

*Grado : 4 cuatrimestre*

### Ejercicio 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 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 (trabáelo con un error de estimación de 3%).

$$n = \underline{\underline{1085}}$$

$$N = 45,000$$

$$P = 50\% = 0.5\%$$

$$q = 1 - P = 0.5\%$$

$$B = 3\% = 0.03\%$$

$$n = \frac{NPq}{(n-1) + Pq}$$

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

$$= \frac{(45,000)(0.5)(0.5)}{(44,999)(0.000225) + (0.5)(0.5)} = 1085$$

$$n = 45,000 \times 0.5 \times 0.5 \div ((44,999 \times 0.000225) + (0.5 \times 0.5)) = 1,084.36$$
$$\approx \underline{\underline{1,085}}$$

### Ejercicio 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 amas 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. (trabáelo con un error de estimación de 5%).

$$n = \underline{\underline{314}}$$

$$N = 20,000$$

$$P = 72.5\% = 0.725\%$$

$$q = 1 - P = 0.275\%$$

$$B = 5\% = 0.05\%$$

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

$$n = \frac{NPq}{(n-1) + Pq} = \frac{(20,000)(0.725)(0.275)}{(19,999)(0.000625) + (0.725)(0.275)} = 314$$

$$n = 20,000 \times 0.725 \times 0.275 \div ((19,999 \times 0.000625) + (0.725 \times 0.275)) = 314$$

### Ejercicio 3

$$\begin{aligned}N &= 50,000 \\P &= 76\% = 0.76\% \\q &= 1-P = 0.24\% \\B &= 4\% = 0.04\% \\n &= \underline{\underline{452}}\end{aligned}$$

$$D = \frac{B^2}{4} = \frac{(0.04)^2}{4} = \underline{\underline{0.0004}}$$

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

$$n = 50,000 \times 0.76 \times 0.24 \div ((49,999 \times 0.0004) + (0.76 \times 0.24)) = 451.88 \\ = \underline{\underline{452}}$$

### Ejercicio 4

$$\begin{aligned}N &= 25,000 \\P &= 55\% = 0.55\% \\q &= 1-P = 0.45\% \\B &= 2\% = 0.02\% \\n &= \underline{\underline{2,253}}\end{aligned}$$

$$D = \frac{B^2}{4} = \frac{(0.02)^2}{4} = \underline{\underline{0.0001}}$$

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

$$n = 25,000 \times 0.55 \times 0.45 \div ((24,999 \times 0.0001) + (0.55 \times 0.45)) = 2,252.12 \\ = \underline{\underline{2,253}}$$

### Ejercicio 5

$$\begin{aligned}N &= 25,000 \\P_1 &= 65\% = 0.65\% \\q_1 &= 1-P_1 = 0.35\% \\B_1 &= 2\% = 0.02\% \\n_1 &= \underline{\underline{2086}}\end{aligned}$$

$$D = \frac{B^2}{4} = \frac{(0.02)^2}{4} = \underline{\underline{0.0001}}$$

$$n = \frac{NPq}{(N-1)D + Pq} = \frac{(25,000)(0.65)(0.35)}{(24,999)(0.0001) + (0.65)(0.35)} =$$

$$n = 25,000 \times 0.65 \times 0.35 \div ((24,999 \times 0.0001) + (0.65 \times 0.35)) = 2085.31 \\ = \underline{\underline{2086}}$$

### Ejercicio 6

$$\begin{aligned} N &= 25,000 \\ P_2 &= 50\% = 0.5\% \\ q_2 &= 1 - P_2 = 0.5\% \\ B_2 &= 3\% = 0.03\% \\ n &= \underline{\underline{1064}} \end{aligned}$$

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

$$n = \frac{NPq}{(N-1)D + pq} = \frac{(25,000)(0.5)(0.5)}{(24,999)(0.000225) + (0.5)(0.5)} =$$

$$n = 25,000 \times 0.5 \times 0.5 = \div ((24,999 \times 0.000225) + (0.5 \times 0.5)) = 1063.87 = \underline{\underline{1064}}$$

### Ejercicio 7

$$\begin{aligned} N &= 10,000 \\ P &= 50\% = 0.5\% \\ q &= 1 - P = 0.5\% \\ B &= 5\% = 0.05\% \\ n &= \underline{\underline{385}} \end{aligned}$$

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

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

$$n = 10,000 \times 0.5 \times 0.5 = \div ((9,999 \times 0.000625) + (0.5 \times 0.5)) = 384.65 = \underline{\underline{385}}$$

### Ejercicio 8

$$\begin{aligned} N &= 15,000 \\ P &= 66\% = 0.66\% \\ q &= 1 - P = 0.34\% \\ B &= 3\% = 0.03\% \\ n &= \underline{\underline{936}} \end{aligned}$$

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

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

$$n = 15,000 \times 0.66 \times 0.34 = \div ((14,999 \times 0.000225) + (0.66 \times 0.34)) = 935.21 = \underline{\underline{936}}$$



### Ejercicio 9

$$N = 35,000$$

$$P_1 = 55\% = 0.55$$

$$q_1 = 1 - P = 0.45$$

$$B_1 = 5\% = 0.05$$

$$n_1 = \underline{\underline{392}}$$

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

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

$$n = 35,000 \times 0.55 \times 0.45 = \div ((34,999 \times 0.000625) + (0.55 \times 0.45)) = 391.58$$
$$= \underline{\underline{392}}$$

### Ejercicio 10

$$N = 35,000$$

$$P_2 = 52\% = 0.52$$

$$q_2 = 1 - P_2 = 0.48$$

$$B_2 = 3\% = 0.03$$

$$n_2 = \underline{\underline{1076}}$$

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

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

$$n = 35,000 \times 0.52 \times 0.48 = \div ((34,999 \times 0.000225) + (0.52 \times 0.48)) = 1075.28$$
$$= \underline{\underline{1076}}$$