

**NOMBRE DEL ALUMNO: JUAN JOSE PEREZ MENDEZ**

**CARRERA: ADMINISTRACION Y ESTRATEGIAS DE NEGOCIOS**

**CATEDRATICO: JORGE ENRIQUE ALBORES AGUILAR**

**MATERIA: ESTADISTICA INFERENCIAL**

**CUTRIMESTRE: 4TO, SEMIESCOLARIZADO**

**ACTIVIDAD #1: MUESTREO**

**FECHA: 27/SEP/2022**

## Juan Jose Pérez Mendéz Estadística Inferencial

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 45000 casas de casa. Por lo tanto, entrevistar, 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 (trabálo con un error de estimación de 3%).

$$\begin{aligned} N &= 45000 \\ P &= 50\% = 0.5 \\ q &= 1 - P = 0.5 \\ B &= 3\% = 0.03 \\ n &= \end{aligned} \quad D = \frac{(0.03)^2}{4} = 0.000225 \quad n = \frac{N P q}{(N-1) D + P q}$$
$$n = \frac{(45000)(0.5)(0.5)}{(44999)(0.000225) + (0.5 \times 0.5)} =$$
$$n = \frac{(45000)(0.5)(0.5)}{(44999 \times 0.000225) + (0.5 \times 0.5)} =$$
$$n = 1084.36 \quad \underline{\underline{n = 1085}}$$

2. En un municipio se pretende realizar una encuesta sobre la opinión de las personas de un producto de limpieza, el cual cuenta con 20000 casas 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. (trabálo con un error de estimación de 5%).

$$\begin{aligned} N &= 20000 \\ P &= 72.5\% = 0.725 \\ q &= 1 - P = 0.275 \\ B &= 5\% = 0.05 \\ n &= ? \end{aligned} \quad D = \frac{(0.05)^2}{4} = 0.000625$$
$$n = \frac{(20000)(0.725)(0.275)}{(19999)(0.000625) + (0.725 \times 0.275)} =$$
$$n = 20000 \times 0.725 \times 0.275 = \frac{20000 \times 0.725 \times 0.275}{((19999 \times 0.000625) + (0.725 \times 0.275))} =$$
$$\underline{\underline{n = 314}}$$

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\*  $N = 10000$

$P = 50\% = 0.5$      $q = 1 - P$

$q = 1 - P = 0.5$      $q = 1 - 0.5$

$B = 5\% = 0.05$      $q = 0.5$

$n =$

$$D = \frac{B^2}{4}$$

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

$$D = 0.000625$$

$$n = \frac{N P q}{(N-1)D + Pq}$$

$$n = \frac{(10000)(0.5)(0.5)}{(9999)(0.000625) + (0.5)(0.5)}$$

$$n = 10000 \times 0.5 \times 0.5 = \div [(9999 \times 0.000625) + (0.5 \times 0.5)] =$$

$$n = 384.65$$

$$n = \underline{\underline{385}}$$

\*  $N = 15000$

$P = 66\% = 0.66$

$q = 1 - P = 0.34$

$B = 3\% = 0.03$

$n =$

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

$$D = 0.000225$$

$$n = \frac{(15000)(0.66)(0.34)}{(14999)(0.000225) + (0.66)(0.34)}$$

$$n = (15000)(0.66)(0.34) = \div [(14999 \times 0.000225) + (0.66 \times 0.34)]$$

$$n = 935.21$$

$$n = \underline{\underline{936}}$$

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$$N = 50000 \quad q = 1 - p = 0.24$$

$$P = 76\% = 0.76 \quad D = \frac{B^2}{4} = D = \frac{(0.04)^2}{4} \quad D = 0.0004$$

$$q = 0.24$$

$$B = 4\% = 0.04$$

$$n = ?$$

$$n = \frac{N p q}{(N-1) D + p q}$$

$$n = \frac{(50000)(0.76)(0.24)}{(49999)(0.0004) + (0.76)(0.24)} = 451.88 = \underline{\underline{452}}$$

$$N = 25000$$

$$P = 55\% = 0.55 \quad q = 1 - p = 0.45$$

$$q = 0.45$$

$$B = 2\% = 0.02$$

$$n = ?$$

$$D = \frac{B^2}{4} = 0.0001$$

$$n = \frac{N p q}{(N-1) D + p q}$$

$$n = \frac{(25000)(0.55)(0.45)}{(24999)(0.0001) + (0.55)(0.45)} = 2252.12 = \underline{\underline{2253}}$$

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$$* N = 250000$$

$$P_1 = 65\% = 0.65$$

$$q_1 = 1 - P = 0.35$$

$$B_1 = 2\% = 0.02$$

$$n_1 =$$

$$D = \frac{B^2}{4}$$

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

$$D = 0.0001$$

$$n = \frac{N P q}{(N-1) D + P q}$$

$$n = \frac{(250000)(0.65)(0.35)}{(249999)(0.0001) + (0.65)(0.35)}$$

$$P_2 = 50\% = 0.5$$

$$q_2 = 1 - P = 0.5$$

$$B_2 = 3\% = 0.03$$

$$n_2 =$$

$$n = 250000 \times 0.65 \times 0.35 = \div ((249999 \times 0.0001) + (0.65 \times 0.35))$$

$$n = 2254.49$$

$$n = \underline{\underline{2255}}$$

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

$$D = 0.000225$$

$$n = \frac{(250000)(0.5)(0.5)}{(249999)(0.000225) + (0.5)(0.5)}$$

$$n = 250000 \times 0.5 \times 0.5 = \div ((249999 \times 0.000225) + (0.5 \times 0.5)) =$$

$$n = 1106.19$$

$$n = \underline{\underline{1107}}$$

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$$N = 35000 \quad q = 1 - p$$

$$p_1 = 55\% = 0.55$$

$$q_1 = 1 - p = 0.45$$

$$B_1 = 5\% = 0.05$$

$$n_1 =$$

$$D = \frac{B^2}{4}$$

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

$$D = 0.000625$$

$$n = \frac{N p q}{(N-1) D + p q}$$

$$n = \frac{(35000)(0.55)(0.45)}{(34999)(0.000625) + (0.55)(0.45)}$$

$$n = 35000 \times 0.55 \times 0.45 = \div ((34999 \times 0.000625) + (0.55 \times 0.45)) =$$

$$n = 391.58 \quad n = \underline{\underline{392}}$$

$$p_2 = 52\% = 0.52$$

$$q_2 = 1 - p = 0.48$$

$$B_2 = 3\% = 0.03$$

$$n_2 =$$

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

$$n = \frac{(35000)(0.52)(0.48)}{(34999)(0.000225) + (0.52)(0.48)}$$

$$n = 35000 \times 0.52 \times 0.48 = \div ((34999 \times 0.000225) + (0.52 \times 0.48)) =$$

$$n = 1075.28$$

$$n = \underline{\underline{1076}}$$