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**Actividad de datos agrupados y muestreo.**

**Materia: Bioestadística.**

PASIÓN POR EDUCAR

**Grado: 4to cuatrimestre**

**Grupo: B**

Comitán de Domínguez Chiapas, a 04 de Diciembre de 2020.

50 49 25 50 47  
 29 46 34 48 25  
 20 33 49 40 33  
 31 39 43 43 35  
 28 23 20 44 31

\* Rango =  $\frac{\text{No. mayor} - \text{No. menor}}{\text{No. intervalos}}$   
 • Rango =  $\frac{50 - 20}{6} = 5$

Intervalo	F <sub>i</sub>	% F <sub>i</sub>	F <sub>ia</sub>	% F <sub>ia</sub>	$\bar{x}_i$	F <sub>i</sub> $\bar{x}_i$	$\bar{x}_i^2$
20-25	...3	12%	3	12%	22.5	67.5	506.25
25-30	...4	16%	7	28%	27.5	110	756.25
30-35	...5	20%	12	48%	32.5	162.5	1056.25
35-40	..2	8%	14	56%	37.5	75	1406.25
40-45	...4	16%	18	72%	42.5	170	1806.25
45-50	.....7	28%	25	100%	47.5	332.5	2256.25
	$\Sigma F_i = 25$					$\Sigma F_i \bar{x}_i = 917.5$	

F <sub>i</sub> $\bar{x}_i^2$
1518.75
3025
5281.25
2812.5
7225
15793.75
$\Sigma F_i \bar{x}_i^2 = 35,656.25$

▷  $\bar{X} = \frac{\Sigma F_i \bar{x}_i}{n} = \frac{917.5}{25} = 36.7 //$

▷  $Me = L_i + \frac{\frac{n}{2} - F_{i-1}}{F_i} \cdot a_i$       $\frac{n}{2} = \frac{25}{2} = 12.5$   
 $Me = 35 + \frac{12.5 - 12}{2} \cdot 5 = 36.25 //$

▷  $Mo = L_i + \frac{F_i - F_{i-1} - 1}{(F_i - F_{i-1} - 1) + (F_i - F_{i+1})} \cdot a_i$   
 $Mo = 45 + \frac{7 - 4}{(7 - 4) + (7 - 0)} \cdot 5 = 46.5 //$

▷  $S^2 = \frac{\Sigma F_i \bar{x}_i^2 - \frac{(\Sigma F_i \bar{x}_i)^2}{n}}{n-1}$   
 $S^2 = \frac{35656.25 - \frac{(917.5)^2}{25}}{24} = 82.66 //$

▷  $S = 9.091 //$

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80 75 71 80 71 44  
 38 56 80 42 68 45  
 70 40 75 47 53 54  
 78 42 66 45 64 58  
 55 56 73 56 41 64  
 38 67 79 49 44 38

\* Rango =  $\frac{\text{No. mayor} - \text{No. menor}}{\text{No. Intervalos}}$

• Rango =  $\frac{80 - 38}{7} = 6$

Intervalo	Fi	%Fi	Fia	%Fia	$\bar{x}_i$	$F_i \bar{x}_i$	$\bar{x}_i^2$
38-44	8	22.22%	8	22.22%	41	328	1681
44-50	5	13.88%	13	36.11%	47	235	2209
50-56	3	8.33%	16	44.44%	53	159	2809
56-62	4	11.11%	20	55.55%	59	236	3481
62-68	4	11.11%	24	66.66%	65	260	4225
68-74	5	13.88%	29	80.55%	71	355	5041
74-80	7	19.44%	36	100%	77	539	5929
	$\Sigma F_i = 36$					$\Sigma F_i \bar{x}_i = 2112$	

$F_i \bar{x}_i^2$
13448
11045
8427
13924
16900
25205
41503
$\Sigma F_i \bar{x}_i^2 = 130,452$

▷  $\bar{x} = \frac{\Sigma F_i \bar{x}_i}{n} = \frac{2112}{36} = 58.66 //$

▷  $Me = Li + \frac{\frac{n}{2} - F_i - 1}{F_i} \cdot a_i$        $\frac{n}{2} = \frac{36}{2} = 18$   
 $Me = 56 + \frac{18 - 16 - 1}{4} \cdot 6 = 59 //$

▷  $Mo = Li + \frac{F_i - F_i - 1}{(F_i - F_i - 1) + (F_i - F_i + 1)} \cdot a_i$

$Mo = 38 + \frac{8 - 0}{(8 - 0) + (8 - 5)} \cdot 6 = 42.36 //$

▷  $S^2 = \frac{\Sigma F_i \bar{x}_i^2 - \frac{(\Sigma F_i \bar{x}_i)^2}{n}}{n - 1}$

▷  $S^2 = \frac{130,452 - \frac{(2112)^2}{36}}{35} = 187.08 //$

$S = 13.67 //$

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- ▷  $q$  = Probabilidad que no ocurra un evento
- ▷  $P$  = Probabilidad que si ocurra un evento
- ▷  $B$  = Error de estimación (5%, 4%, 3%, 2%, 1%)
- ▷  $n$  = Muestra
- ▷  $N$  = Población

$$q = 1 - P$$

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

$$n = \frac{NPq}{(N-1)D + pq}$$

### ▷ EJERCICIO 1

$$N = 45000$$

$$P = 0.5$$

$$q = 1 - 0.5 = 0.5$$

$$B = 3\% = 0.03$$

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

$$n = \frac{(45000)(0.5)(0.5)}{(44999)(0.000225) + (0.5)(0.5)} = 1084.36$$

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

### ▷ EJERCICIO 2

$$N = 20000$$

$$P = 72.5\% = 0.725$$

$$q = 1 - 0.725 = 0.275$$

$$B = 5\% = 0.05$$

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

$$n = \frac{(20000)(0.725)(0.275)}{(19999)(0.000625) + (0.725)(0.275)} = 314.007$$

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

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### ▷ EJERCICIO 3

$$N = 50000$$

$$P = 76\% = 0.76$$

$$q = 1 - 0.76 = 0.24$$

$$B = 4\% = 0.04$$

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

$$n = \frac{(50000)(0.76)(0.24)}{(49999)(0.0004) + (0.76)(0.24)} = 451.887$$

$$n = \underline{452} \#$$

### ▷ EJERCICIO 4

$$N = 10000$$

$$P = 0.5$$

$$q = 1 - 0.5 = 0.5$$

$$B = 5\% = 0.05$$

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

$$n = \frac{(10000)(0.5)(0.5)}{(9999)(0.000625) + (0.5)(0.5)} = 384.652$$

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

### ▷ EJERCICIO 5

$$N = 25000$$

$$P = 55\% = 0.55$$

$$q = 1 - 0.55 = 0.45$$

$$B = 2\% = 0.02$$

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

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

$$n = \underline{2253} \#$$

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▷ EJERCICIO 6

$$N = 15000$$

$$P = 66\% = 0.66$$

$$q = 1 - 0.66 = 0.34$$

$$B = 3\% = 0.03$$

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

$$n = \frac{(15000)(0.66)(0.34)}{(1.4999)(0.000225) + (0.66)(0.34)} = 935.21$$

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

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