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Nombre del trabajo: Estrato

**Materia: Estadística inferencial en
nutrición**

PASIÓN POR EDUCAR

Grado: 4°A

Grupo: LNU

$$N_1 = 30$$

$$N_2 = 30$$

$$N_3 = 30$$

$$N_4 = 30$$

$$N = 120$$

$$n = 20$$

$$n_1 = 20 \left(\frac{30}{120} \right) = 5$$

$$n_2 = 20 \left(\frac{30}{120} \right) = 5$$

$$n_3 = 20 \left(\frac{30}{120} \right) = 5$$

$$n_4 = 20 \left(\frac{30}{120} \right) = 5$$

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42A LNU

Estrato 1

200
220
180
230
190

$$EF_1 = 1020$$

$$EF_2 = 209800$$

$$n = 5$$

$$\bar{x} = \frac{1020}{5} = 204$$

$$s^2 = \frac{(209800) - \frac{(1020)^2}{5}}{4}$$

$$s^2 = 430$$

Estrato 2

195
230
210
200
170

$$EF_1 = 1005$$

$$EF_2 = 203925$$

$$n = 5$$

$$\bar{x} = \frac{1005}{5} = 201$$

$$s^2 = \frac{(203925) - \frac{(1005)^2}{5}}{4}$$

$$s^2 = 480$$

Estrato 3

240
195
208
215
230

$$EF_1 = 1088$$

$$EF_2 = 238014$$

$$n = 5$$

$$\bar{x} = \frac{1088}{5} = 217.6$$

$$s^2 = \frac{(238014) - \frac{(1088)^2}{5}}{4}$$

$$s^2 = 316.3$$

Estrato 4

215
200
225
205
210

$$EF_1 = 1055$$

$$EF_2 = 222975$$

$$n = 5$$

$$\bar{x} = \frac{1055}{5} = 211$$

$$s^2 = \frac{(222975) - \frac{(1055)^2}{5}}{4}$$

$$s^2 = 92.5$$

$$\bar{y}_{st} = \frac{1}{N} \sum_{i=1}^4 N_i \bar{y}_i$$

$$\bar{y}_{st} = \frac{1}{120} \sum (30 \times 204) + (30 \times 201) + (30 \times 217.6) + (30 \times 211)$$

$$\bar{y}_{st} = 208.4$$

$$\hat{\sigma}^2(\bar{y}_{st}) = \frac{1}{N^2} \sum_{i=1}^4 N_i^2 \left(\frac{N_i - n_i}{N_i} \right) \left(\frac{y_i^2}{n_i} \right)$$

$$\left(\frac{N_i - n_i}{N_i} \right) = \frac{30 - 5}{30} = \frac{5}{6}$$

$$\hat{\sigma}^2(\bar{y}_{st}) = \left(\frac{1}{120^2} \right) \left(\frac{5}{6} \right) \left[(30)^2 \left(\frac{430}{5} \right) + (30)^2 \left(\frac{480}{5} \right) + (30)^2 \left(\frac{316.3}{5} \right) + (30)^2 \left(\frac{92.5}{5} \right) \right]$$

$$\hat{\sigma}^2(\bar{y}_{st}) = 237384 \times \frac{5}{6} = 197820$$

$$\hat{\sigma}(\bar{y}_{st}) = \sqrt{197820} = 444.78$$

$$\bar{y}_{st} \pm 2\sqrt{\hat{\sigma}^2(\bar{y}_{st})} = 208.4 \pm 2\sqrt{197820}$$
$$= 208.4 \pm 889.56$$

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4^o A LNU

$$N_1 = 24$$

$$N_2 = 36$$

$$N_3 = 30$$

$$N_4 = 30$$

$$N = 120$$

$$n = 40$$

$$n_1 = 40 \left(\frac{24}{120} \right) = 8$$

$$n_2 = 40 \left(\frac{36}{120} \right) = 12$$

$$n_3 = 40 \left(\frac{30}{120} \right) = 10$$

$$n_4 = 40 \left(\frac{30}{120} \right) = 10$$

Estrato 1

115
105
98
90
103
108
112
100
99
96
103
120

$$EC: = 831$$

$$EC^2 = 86771$$

$$n = 8$$

$$\bar{x} = \frac{831}{8} = 103.87$$

$$s^2 = \frac{(86771) - \frac{(831)^2}{8}}{7}$$

$$s^2 = 64.41$$

Estrato 2

100
125
120
102
93
98
99
105
104
106
115
100

$$EC: = 1267$$

$$EC^2 = 134785$$

$$n = 12$$

$$\bar{x} = \frac{1267}{12} = 105.58$$

$$s^2 = \frac{(134785) - \frac{(1267)^2}{12}}{11}$$

$$s^2 = 91.90$$

Estrato 3

115
100
104
106
108
98
97
107
110
108
107
120

$$EC: = 1053$$

$$EC^2 = 111167$$

$$n = 10$$

$$\bar{x} = \frac{1053}{10} = 105.3$$

$$s^2 = \frac{(111167) - \frac{(1053)^2}{10}}{9}$$

$$s^2 = 31.78$$

Estrato 4

98
96
140
116
100
105
103
123
115
100
108
100

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4º A LNU

$$EC: = 1096$$

$$EC^2 = 121864$$

$$n = 10$$

$$\bar{x} = \frac{1096}{10} = 109.6$$

$$s^2 = \frac{(121864) - \frac{(1096)^2}{10}}{9}$$

$$s^2 = 193.6$$

$$\bar{y}_{gt} = \frac{1}{120} \sum_{i=1}^4 (24 \times 103.87) + (36 \times 109.58) + (30 \times 105.3) + (30 \times 109.6)$$

$$\bar{y}_{gt} = 106.17$$

$$\hat{V}(\bar{y}_{gt}) = \frac{1}{N^2} \sum_{i=1}^4 N_i^2 \left(\frac{N_i - n_i}{N_i} \right) \left(\frac{s_i^2}{n_i} \right)$$

$$\left(\frac{N_i - n_i}{N_i} \right) = \frac{24 - 8}{24} = \frac{2}{3}$$

$$\hat{V}(\bar{y}_{gt}) = \left(\frac{1}{120^2} \right) \left(\frac{2}{3} \right) \left[(24^2) \left(\frac{67.41}{8} \right) + (36^2) \left(\frac{91.90}{12} \right) + (30^2) \left(\frac{31.78}{10} \right) + (30^2) \left(\frac{193.6}{10} \right) \right]$$

$$\hat{V}(\bar{y}_{gt}) = 1.61$$

$$\bar{y}_{gt} \pm 2\sqrt{\hat{V}(\bar{y}_{gt})} = 106.17 \pm 2\sqrt{1.61}$$

$$106.17 \pm 2.53$$

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