

Solution

Gender	A company			B company		
	Total income (Thousand Fts)	Number of employees (%)	Group intensity ratio (per capita income)	Total income (Thousand Fts)	Number of employees (%)	Group intensity ratio (per capita income)
Male	2400	83,3	48	1000	40,0	50
Female	300	16,7	30	1000	60,0	33,3
Sum	2700	100,0	45	2000	100,0	40,0

Solution

The change of the total intensity ratio (mean intensity ratio) depends on the change of the composition of population and the change of the group intensity ratio.

We can compute the changes with subtraction or with quotient (index)

$$D = \frac{\sum B_1 V_1}{\sum B_1} - \frac{\sum B_0 V_0}{\sum B_0}$$

$$D' = \frac{\sum B_s V_1}{\sum B_s} - \frac{\sum B_s V_0}{\sum B_s}$$

$$D'' = \frac{\sum B_1 V_s}{\sum B_1} - \frac{\sum B_0 V_s}{\sum B_0}$$

$$I = \frac{\sum B_1 V_1}{\sum B_1} \div \frac{\sum B_0 V_0}{\sum B_0}$$

$$I' = \frac{\sum B_s V_1}{\sum B_s} \div \frac{\sum B_s V_0}{\sum B_s}$$

$$I'' = \frac{\sum B_1 V_s}{\sum B_1} \div \frac{\sum B_0 V_s}{\sum B_0}$$

- a) $B_s = B_0$ és $V_s = V_1$
b) $B_s = B_1$ és $V_s = V_0$

$$D = D' + D''$$

$$I = I' \cdot I''$$

$$D' = \frac{\sum B_1 V_1}{\sum B_1} - \frac{\sum B_1 V_0}{\sum B_1}$$

$$D'' = \frac{\sum B_1 V_0}{\sum B_1} - \frac{\sum B_0 V_0}{\sum B_0}$$

$$I' = \frac{\sum B_1 V_1}{\sum B_1} \div \frac{\sum B_1 V_0}{\sum B_1}$$

$$I'' = \frac{\sum B_1 V_0}{\sum B_1} \div \frac{\sum B_0 V_0}{\sum B_0}$$

$$\bar{V}_s = \frac{\sum B_1 V_0}{\sum B_1} = \frac{20 \cdot 48 + 30 \cdot 30}{50} = 37,2$$