

【達成精度の算出に係る誤差算式】

$$\begin{aligned}
 (C^{(k)})^2 = & \sum_r \sum_h \left[\frac{1}{M_{rh}} \left(\frac{1}{f_{rh}} - 1 \right) \left(\frac{(N_{rh} \bar{X}_{rh})^2}{\left(\sum_{r'=1}^R \sum_{h'=1}^{L_{r'h'}} N_{r'h'} \bar{X}_{r'h'} \right)^2} (C_{x_{rh}}^{(k)})^2 + \frac{(N_{rh} \bar{Y}_{rh})^2}{\left(\sum_{r'=1}^R \sum_{h'=1}^{L_{r'h'}} N_{r'h'} \bar{Y}_{r'h'} \right)^2} (C_{y_{rh}}^{(k)})^2 \right. \right. \\
 & - 2 \frac{(N_{rh} \bar{X}_{rh})(N_{rh} \bar{Y}_{rh})}{\left(\sum_{r'=1}^R \sum_{h'=1}^{L_{r'h'}} N_{r'h'} \bar{X}_{r'h'} \right) \left(\sum_{r'=1}^R \sum_{h'=1}^{L_{r'h'}} N_{r'h'} \bar{Y}_{r'h'} \right)} C_{xy_{rh}}^{(k)} \\
 & \left. - \frac{(N_{rh} \bar{X}_{rh})^2}{\left(\sum_{r'=1}^R \sum_{h'=1}^{L_{r'h'}} N_{r'h'} \bar{X}_{r'h'} \right)^2} (C_{w'_{rh}}^{(k)})^2 \right) \\
 & + \frac{1}{N_{rh}} \frac{1}{f_{rh}} \frac{(N_{rh} \bar{X}_{rh})^2}{\left(\sum_{r'=1}^R \sum_{h'=1}^{L_{r'h'}} N_{r'h'} \bar{X}_{r'h'} \right)^2} (C_{w_{rh}}^{(k)})^2 \left. \right]
 \end{aligned}$$

ここで、

- $C^{(k)}$: 達成精度算出区分における企業規模 (k) の 1 人平均所定内給与額の標準誤差率
- r : 達成精度算出区分内における各都道府県、産業の層番号
- h : 事業所規模区分
- $X_{rhij} = Z_{rhij} \times Y_{rhij}$
- Y_{rhij} : 企業規模が k の時 1、それ以外の時 0 となる変数
- Z_{rhij} : (各都道府県、産業 r における) 事業所規模 h 、 i 事業所の j 番目の労働者の賃金
- M_{rh} : (各都道府県、産業 r における) 事業所規模 h の母集団事業所数
- N_{rh} : (各都道府県、産業 r における) 事業所規模 h の労働者数
- N_{rhi} : (各都道府県、産業 r における) 事業所規模 h 、 i 事業所の労働者数
- m_{rh} : (各都道府県、産業 r における) 事業所規模 h の標本事業所数
- n_{rhi} : (各都道府県、産業 r における) 事業所規模 h 、 i 事業所の標本労働者数
- f_{rh} : (各都道府県、産業 r における) 事業所規模 h における事業所の抽出率
- g_{rhi} : (各都道府県、産業 r における) 事業所規模 h 、 i 事業所における労働者の抽出率

$$\hat{T}_{x_{rhi}} = \frac{N_{rhi}}{n_{rhi}} \sum_{j=1}^{n_{rhi}} X_{rhij}$$

$$\hat{T}_{x_{rh}} = \frac{M_{rh}}{m_{rh}} \sum_{i=1}^{m_{rh}} \hat{T}_{x_{rhi}} = \frac{M_{rh}}{m_{rh}} \sum_{i=1}^{m_{rh}} \frac{N_{rhi}}{n_{rhi}} \sum_{j=1}^{n_{rhi}} X_{rhij}$$

$$\hat{\hat{T}}_{x_{rh}} = \frac{1}{m_{rh}} \sum_{i=1}^{m_{rh}} \hat{T}_{x_{rhi}} = \frac{1}{m_{rh}} \sum_{i=1}^{m_{rh}} \frac{N_{rhi}}{n_{rhi}} \sum_{j=1}^{n_{rhi}} X_{rhij}$$

$$Var(\hat{T}_{x_{rh}}) = \frac{1}{m_{rh} - 1} \sum_{i=1}^{m_{rh}} (\hat{T}_{x_{rhi}} - \hat{\hat{T}}_{x_{rh}})^2$$

$$\hat{T}_{y_{rhi}} = \frac{N_{rhi}}{n_{rhi}} \sum_{j=1}^{n_{rhi}} Y_{rhij}$$

$$\hat{T}_{y_{rh}} = \frac{M_{rh}}{m_{rh}} \sum_{i=1}^{m_{rh}} \hat{T}_{y_{rhi}} = \frac{M_{rh}}{m_{rh}} \sum_{i=1}^{m_{rh}} \frac{N_{rhi}}{n_{rhi}} \sum_{j=1}^{n_{rhi}} Y_{rhij}$$

$$\hat{\bar{T}}_{y_{rh}} = \frac{1}{m_{rh}} \sum_{i=1}^{m_{rh}} \hat{T}_{y_{rhi}} = \frac{1}{m_{rh}} \sum_{i=1}^{m_{rh}} \frac{N_{rhi}}{n_{rhi}} \sum_{j=1}^{n_{rhi}} Y_{rhij}$$

$$\text{Var}(\hat{T}_{y_{rh}}) = \frac{1}{m_{rh} - 1} \sum_{i=1}^{m_{rh}} (\hat{T}_{y_{rhi}} - \hat{\bar{T}}_{y_{rh}})^2$$

$$\text{Cov}(\hat{T}_{x_{rh}}, \hat{T}_{y_{rh}}) = \frac{1}{m_{rh} - 1} \sum_{i=1}^{m_{rh}} (\hat{T}_{x_{rhi}} - \hat{\bar{T}}_{x_{rh}})(\hat{T}_{y_{rhi}} - \hat{\bar{T}}_{y_{rh}})$$

$$\bar{X}_{rhi} = \frac{1}{n_{rhi}} \sum_{j=1}^{n_{rhi}} X_{rhij}$$

$$\text{Var}(X_{rhi}) = \frac{1}{n_{rhi} - 1} \sum_{j=1}^{n_{rhi}} (X_{rhij} - \bar{X}_{rhi})^2$$

$$(C x_{rh}^{(k)})^2 = \frac{\text{Var}(\hat{T}_{x_{rh}})}{\left(\frac{1}{M_{rh}} \hat{T}_{x_{rh}}\right)^2}$$

$$(C y_{rh}^{(k)})^2 = \frac{\text{Var}(\hat{T}_{y_{rh}})}{\left(\frac{1}{M_{rh}} \hat{T}_{y_{rh}}\right)^2}$$

$$C x y_{rh}^{(k)} = \frac{\text{Cov}(\hat{T}_{x_{rh}}, \hat{T}_{y_{rh}})}{\left(\frac{1}{M_{rh}} \hat{T}_{x_{rh}}\right) \left(\frac{1}{M_{rh}} \hat{T}_{y_{rh}}\right)}$$

$$(C w_{rh}^{(k)})^2 = \frac{1}{m_{rh}} \sum_{i=1}^{m_{rh}} \left(\frac{1}{g_{rhi}} - 1\right) \left(\frac{N_{rhi}}{\left(\frac{1}{M_{rh}} N_{rh}\right)}\right) \frac{\text{Var}(X_{rhi})}{\left(\frac{1}{N_{rh}} \hat{T}_{x_{rh}}\right)^2}$$

$$(C w'_{rh}{}^{(k)})^2 = \frac{M_{rh}}{N_{rh}} (C w_{rh}^{(k)})^2$$

である。