Annex B. Methodological algorithms

The following section describes the distance from success and search strength algorithm discussed in Chapter 5.

Distances from success

To calculate the quantitative distance between a cluster or geographic unit from the measurement criteria, the following formula is used:

- If the Resident Employed Labour Force is lower than the minimum population, then the distance is defined as:

$$Distance = \sqrt{(HS - RELF)^2 + (LP - RELF)^2} + \sqrt{(HS - WELF)^2 + (LP - WELF)^2}$$

- If the Resident Employed Labour Force is higher than the target population, then the distance is defined as:

$$Distance = \min\left\{\left(MS - \frac{RW}{REFL}\right), 0\right\} + \min\left\{\left(MS - \frac{RW}{WELF}\right), 0\right\}$$

In the R package, the distance from success is called validity and the following formula is used:

$$V(SC, W) = \left[1 - \left(1 - \frac{SC_{min}}{SC_{target}}\right) \cdot \max\left(\frac{W_{target} - W}{W_{target} - W_{min}}, 0\right)\right] \cdot \left[\frac{\min(SC, SC_{target})}{SC_{target}}\right]$$

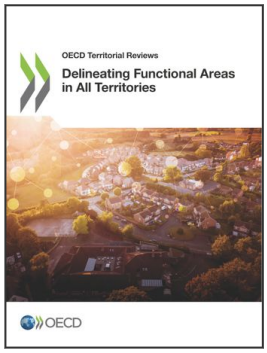
$$V(SC, W) \geq \frac{SC_{min}}{SC_{target}}$$

Where W is the number of workers that live in the cluster and SC is the minimum self-containment (between SSC and DSC) of the cluster.

Search strength

The search strengths between two geographic units, A and B is calculated based on the commuting flows between A to B $F_{\{a,b\}}$ and from B to A $F_{\{b,a\}}$ the number of workers that live in area A $R_{\{a\}}$ and B $W_{\{b\}}$, and the number of workers that are resident in area A $W_{\{A\}}$ and B $R_{\{B\}}$.

$$Strength = \frac{F_{\{a,b\}}}{R_{\{a\}}} * \frac{F_{\{a,b\}}}{W_{\{b\}}} + \frac{F_{\{b,a\}}}{R_{\{b\}}} * \frac{F_{\{b,a\}}}{W_{\{a\}}}$$



From:

Delineating Functional Areas in All Territories

Access the complete publication at:
https://doi.org/10.1787/07970966-en

Please cite this chapter as:

OECD (2020), "Methodological algorithms", in *Delineating Functional Areas in All Territories*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/caf29d59-en

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