

## Exercise on AF Methodology

Given the following matrix of achievements in four dimensions (income, years of education, BMI and access to clean water) and respective deprivation cut-offs:

$$X = \begin{bmatrix} 6 & 3 & 18 & 1 \\ 8 & 4 & 20 & 1 \\ 12 & 6 & 17 & 0 \\ 20 & 8 & 16 & 1 \\ 5 & 3 & 16 & 0 \end{bmatrix}$$

$$z = [10 \quad 6 \quad 18.5 \quad 1]$$

Assume the four dimensions are weighted equally.

- a) Create the deprivation matrix.
- b) Compute the deprivations count vector (ci vector).

Assume a poverty cut-off  $k=2$ .

- c) Create the censored deprivation matrix.
- d) Calculate H, A and M0. Interpret the results.
- e) What is the censored headcount ratio in each indicator and what does it mean?

### Some useful steps for calculation:

1. From the achievement matrix, build the deprivation matrix
2. Build the 'weighted' deprivation matrix
3. Compute the deprivation score for each individual
4. Determine whether each individual is poor or not according with your selected k-value
5. Define 'weighted' censored deprivation matrix (censoring the deprivations of those who are not poor)
6. Now you are ready to compute M0: it is just the mean of the 'weighted' censored deprivation matrix.