**Hands-on training on poverty measurement**

**Exercises – Poverty Lines**

**EXERCISE 1**

This problem set is mainly extracted from “Handbook of Poverty and Inequality”. There are three (4) data sets: household, individual, consumption and prices. The following table gives a nutritional basket, in per capita terms, considered minimal for the healthy survival of a typical adult in a family in rural Bangladesh.

1. **Direct Caloric Intake**

This method considers any household not meeting the nutritional requirement of 2112 Calories per day per person as poor.

* 1. Use the quantity information from the consumption data set and the calorie content information from the following table to calculate each household’s per capita caloric intake (in Calories per day). The unit in the consumption data set is kilograms per week, and this needs to be converted into grams per day.

**Bangladesh Nutritional Basket**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Per capita normative daily requirements | | Average rural consumer price (taka/kilogram) |
|  | Quantity (gram) | Calories |
| Rice | 397 | 1386 | 15.19 |
| Wheat | 40 | 139 | 12.81 |
| Pulses | 40 | 153 | 30.84 |
| Milk | 58 | 39 | 15.90 |
| Oil | 20 | 180 | 58.24 |
| Meat | 12 | 14 | 66.39 |
| Fish | 48 | 51 | 46.02 |
| Vegetables | 177 | 62 | 33.71 |
| Sugar | 20 | 82 | 30.49 |
| Fruit | 20 | 6 | 28.86 |
| Total | 832 | 2112 |  |

Source: Wodon (97)

* 1. What is the percentage of poor people by this method? Calculate the headcount for whole country, Dhaka and Other regions

1. **Food Energy Intake - Simple approach**
2. Calculate the average per capita expenditure for the households whose per capita caloric intake is within the 10 percent of 2112 Calories intake per day.
3. Estimate the percentage of poor people by this method for the country, Dhaka and Other regions.
4. **Food Energy Intake - Regression approach**
   1. Estimate the linear regression between the per capita expenditure and per capita caloric intake
   2. Calculate the expected per capita expenditure at the 2112 Calorie intake level
   3. How many people are under this poverty line in the country? How many poor are in Dhaka and other regions?
   4. Should there be separate regression for each region? If so why?
5. **Cost of Basic Needs - General**
   1. According to previous table and the average rural consumer prices, how much money does a household of four needs each day to meet its caloric requirements?
   2. One way to derive the nonfood allowance is simply to assume a certain percentage of the value of minimum food consumption. How much annual total expenditure does a family of four need if it is to avoid being poor, assuming that nonfood expenses amount to 30 percent of food expenses?
6. **Cost of Basic Needs - Food allowances**
   * 1. The price data set gives village-level price information on all 11 items. Before calculating the food poverty line, check the following issues:
        1. existence of missing data
        2. outliers: these are defined as 2.5 standard deviations of the mean of the logarithm
        3. imputation in case of missing data: use the median price of the village if the number of observations is greater than 5

Estimate the Food component of the poverty line by making the assumption that these villages are representative of the “reference group”.

1. **Cost of Basic Needs – Non-Food allowances**
   1. Estimate the Non-Food component of the poverty line as the simple average of the lower and upper bounds. To calculate these bounds consider a range of **10 percent** of the Food Poverty Line and use the **median** of the share of the non-food expenditure.
   2. How much does the Non-Food component represent of the Food component? Is this amount significantly different from the assumption in point 3.1.b
   3. What percentage of people is poor by this method? How much poor people are in Dhaka and other regions?

**EXERCISE 2**

This exercise takes inspiration from the paper by Pradhan Suryahadi Sumarto and Pritchett (2000): “Measurement of poverty in Indonesia, 1996, 1999 and beyond,” where the authors underline that *a crucial decision in implementing any method of fixing the poverty line is the initial choice of the initial* group of reference. Dataset 08\_ex1\_hh.dta is at household level and it contains information on the total per capita calories daily intake (kcal), the monthly household total per capita food expenditure (pcep\_food), the monthly household total per capita expenditure (pcep), and the monthly household per capita food expenditure divided into different subgroups (pcepf\_\*).

Assume that the Average Kilocalorie Requirement (akr) per day is 2112 and consider three hypotheses about the choice of the reference group for the definition of the poverty line:

1. The group of individuals in the 2nd and 3rd decile
2. The group of individuals in the 1st and 2nd decile
3. The group of individuals between the 1st and 3rd decile
4. Check if within each of three different reference groups the consumption patterns are homogeneous with respect of the composition of the food basket.
5. For each one of the three hypotheses:
   1. Compute the monthly food poverty line
   2. Compute the monthly non-food poverty line as the simple average of the lower and upper bounds. To calculate these bounds consider a range of **10 percent** of the Food Poverty Line and use the **median** of the non-food expenditure.
   3. Compute the share of individuals below the poverty line