## **Assignment weeks 1 and 2**

## *To answer all the questions below, you must use Stata (and, specifically, DASP, if requested). Be concise and clear in your answers.*

## *The assignment is divided into three exercises (the points assigned to each exercise are indicated next to each exercise). Please answer (A) directly in this file after each question (Q) and please attach the \*.do file (do-file) that you generated. Rename both files as: “Assignment weeks 1-2-3 - Name, Surname”. Please submit this completed file and the \*.do through the virtual drop box (boîte de dépôt) in the course portal, no later than Tuesday, February 5 11:59 a.m. (*[*Québec time*](https://www.timeanddate.com/worldclock/converter.html?iso=20190205T165900&p1=189)*).*

## **Exercise 1 (4%)**

Assume that the population is of composed 14 households that live in regions *A, B and C*.

|  |  |  |  |
| --- | --- | --- | --- |
| identifier | region | *income* | hhsize |
| 1 | 1 | 210 | 4 |
| 2 | 1 | 450 | 6 |
| 3 | 1 | 300 | 5 |
| 4 | 1 | 210 | 3 |
| 5 | 2 | 560 | 2 |
| 6 | 2 | 400 | 4 |
| 7 | 3 | 140 | 4 |
| 8 | 3 | 250 | 2 |
| 9 | 3 | 340 | 2 |
| 10 | 3 | 220 | 2 |
| 11 | 3 | 360 | 3 |
| 12 | 3 | 338 | 2 |
| 13 | 3 | 330 | 3 |
| 14 | 3 | 336 | 4 |

**Q 1.1:** Using Stata, generate per capita income (*pcinc*).

**A:**

|  |  |
| --- | --- |
| **identifier** | **pcinc** |
| **1** | **52.5** |
| **2** | **75** |
| **3** | **60** |
| **4** | **70** |
| **5** | **280** |
| **6** | **100** |
| **7** | **35** |
| **8** | **125** |
| **9** | **170** |
| **10** | **110** |
| **11** | **120** |
| **12** | **169** |
| **13** | **110** |
| **14** | **84** |

**Q 1.2:** Using Stata, estimate the average per capita income and the total incomes of our population.

**A: Average Per Capita income= 96.6087**

**Total Incomes = Mean Income\* Pop**

**(318.6957) \*14**

**4461.74**

**Q 1.3:** Assume that, the poverty line is equal to 120, generate the variable “per capita poverty gap (*pgap*)”, and then estimate its average (the per capita poverty gap should be normalized by the poverty line).

**A: 0 .2905797**

**Q 1.4:** Redo question Q 1.3 using DASP.

**A: 0.290580**

**Q 1.5:** Assume that the purchasing power in region B is higher than that of region A by 15% and that of region C is higher than that of region A by 20%. In the case where the region A is the region of reference, generate the variable (*deflator*) as a price deflator index, and then generate the variable real per capita income (*rpcinc*).

**A:**

|  |  |
| --- | --- |
| **identifier** | **rpcinc** |
| **1** | **52.5** |
| **2** | **75** |
| **3** | **60** |
| **4** | **70** |
| **5** | **329.4117** |
| **6** | **117.6471** |
| **7** | **43.75** |
| **8** | **156.25** |
| **9** | **212.5** |
| **10** | **137.5** |
| **11** | **150** |
| **12** | **211.25** |
| **13** | **137.5** |
| **14** | **105** |

**Q 1.6:** Redo the question 1.3 and 1.4 using the real per capita income when the poverty line is 130.

**A: 1.3 = 0.2873877**

**1.4 = 0.278330**

**Exercise 2 (3%)**

The Bureau of Statistics asks you to construct the variable “adult-equivalent size (*aes*)” to monitor the change in the average well-being between two periods, *t*1 and *t*2. The sample has a panel structure since the same households were selected in each of the two periods (see the table below). Based on the recommendation of experts, the adult-equivalent size is defined as follows:

## 

where is the number of adults within the household and is the number of children

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *identifier* | *period* | *income* | *hhsize* |  |
| 1 | 1 | 29 | 4 | 2 |
| 2 | 1 | 50 | 3 | 2 |
| 3 | 1 | 36 | 4 | 3 |
| 1 | 2 | 30 | 4 | 2 |
| 2 | 2 | 48 | 3 | 3 |
| 3 | 2 | 46 | 5 | 2 |

**Q 2.1:** Using Stata, estimate the average per capita income and the average per adult-equivalent income for each period.

**A: Average per capita income in period 1 = 10.45455**

**Average per capita income in period 2 = 10.33333**

**per adult-equivalent income in period 1 = 16.42857**

**per adult-equivalent income in period 2 = 16.75676**

**Q 2.2:** Discuss the changes in each measure of well-being.

**A:**

**The average of per capita income is lower than the average per adult income. In addition, whilst there is a decrease in per capita income from period 1 to period** **2, average per adult-equivalent income increases from period 1 to period 2.**

### Exercise 3 (5.5%)

**Q 3.1** Use the data\_3.dta data file, and then compute the population size of the sampled households.

**A: Population = observations\*mean hhsize**

**2000\*** **7.625**

**15250**

**Q 3.2** Rank the per capita expenditures in ascending order and then generate the variable population share (*ps*) that includes the proportion of the sampled population with corresponding per capita expenditures. Based on this, generate the variable percentiles (*p*) and quantiles (*q*).

**A: (see do.file)**

**Q 3.3** Draw the cumulative distribution curve (X-Axis: the percentiles and Y-Axis: the corresponding per capita expenditures) (range of percentiles: min=0 and max=0.90).

**A: **

**Q 3.4** Plot the quantile curve (X-axis: percentiles and Y-axis: quantiles) (range of percentiles: min=0 and max=0.90), and briefly discuss the results.

**A: **

**The graph shows the income found among those in proportion of the population with higher income around 1**

**Q 3.5** Using DASP, draw the quantile curve for each of the rural and urban regions (range of percentiles: min=0 and max=0.90), and briefly discuss the results.

**A: **

**The graph shows higher income found among those in the urban compared to the rural across all percentiles.**

**Q 3.6** Using DASP, draw the density curves of the per capita expenditures by the sex of the household head (range of per capita expenditures: min=0 and max=800000) and briefly discuss the results.

**A: **

**The graph shows that there are more men getting higher incomes than women in the first bins of the histogram whilst as the income bins decreases, women get higher income than men**