## **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 - 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 2 11:59 p.m. (*[*Québec time*](https://www.timeanddate.com/worldclock/converter.html?iso=20210203T045900&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 | A | 210 | 4 |
| 2 | A | 450 | 6 |
| 3 | A | 300 | 5 |
| 4 | A | 210 | 3 |
| 5 | B | 560 | 2 |
| 6 | B | 400 | 4 |
| 7 | C | 140 | 4 |
| 8 | C | 250 | 2 |
| 9 | C | 340 | 2 |
| 10 | C | 220 | 2 |
| 11 | C | 360 | 3 |
| 12 | C | 338 | 2 |
| 13 | C | 330 | 3 |
| 14 | C | 336 | 4 |

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

**A: gen pcinc= income/ hhsize**

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

**A: average per capita income = 96.6**

**Total incomes of our population = 4444**

**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: Average poverty gap = 0.29**

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

**A: ifgt pcinc, alpha(1) hsize(hhsize) pline(120)**

**Estimate = 0.29**

**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: gen deflator=1**

**replace deflator = 0.85 if region ==2**

**replace deflator = 0.8 if region ==3**

**gen rpinc= pcinc/ deflator**

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

**A: sum rpinc [aw=hhsize]**

**replace pline = 130**

**replace pgap = (pline- rpinc )/pline if ( rpinc < pline)**

**sum pgap [aw=hhsize]**

**Average poverty gap= 0.28**

**Using DASP**

**ifgt rpinc , alpha(1) hsize(hhsize) pline(130)**

**Estimate= 0.27**

**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 for period 1= 10.4**

**Average per capita income for period 2=10.3**

**Average per adult equivalent income for period 1= 16.2**

**Average per adult equivalent income for period 2= 16.4**

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

**A: The average per capita income slightly dropped between the two time periods, this means on average each individual received income which was less by 0.1 in period 2 than they were receiving in period 1 therefore there was a slight drop in income over the two periods hence a slight drop in well-being.**

**The average per adult equivalent income slightly increased by 0.2 from period one to period two. This means by using this proxy as a measure of well-being we conclude that the well-being of individuals slightly improved by 0.2 in period 2 than in period 1.**

### 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 size = 2000**

**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: sort pcexp**

**sum hhsize**

**gen ps= hhsize/r(sum)**

**gen p = sum(ps)**

**gen q = pcexp**

**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 quantile curve shows the level of welfare that are achieved by different positions in the society as such from the curve it shows that 90% of the society spends less 2,000,000.**

**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: **

**From the curves it shows that those in the urban areas have greater expenditures than those in the rural areas as such since expenditure is being used as a proxy of welfare then we can conclude that those in the urban areas are better off than those living in rural areas.**

**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:**



A greater proportion of females have better living standards than males.