Eurostat EDA

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Meta-data description

Nama 10r

Regional accounts are based on the same definitions and concepts as national accounts, this is because they are a specification of the national accounts.

Gross domestic product (GDP) is the standard measure of the value added created through the production of goods and services in a country during a certain period. As such, it also measures the income earned from that production, or the total amount spent on final goods and services (less imports). While GDP is the single most important indicator to capture economic activity, it falls short of providing a suitable measure of people's material well-being for which alternative indicators may be more appropriate.
@GDPSpendingGross

We have two ways of calculating this within regional accounts:

The first one is the output approach

Where the GDP is the sum of gross value added of the various institutional sectors or the various industries plus taxes and less subsidies on products. It is also the balancing item in the total economy production account."

2. Income approach

"GDP is the sum of uses in the total economy generation of income account: compensation of employees plus gross operating surplus and mixed income plus taxes on products less subsidies plus consumption of fixed capital.

Contrary to national accounts GDP is not compoled from the expenditure side in regional accounts due to data limitations on the inter-regional flows of goods and services.

The different measures for the regional GDP are absolute figures in € and Purchasing Power Standards (PPS), figures per inhabitant and relative data compared to the EU Member States average." "Regional Economic Accounts (Reg_eco10)" (n.d.)

Sub-national GDP

Country codes: BE - Belgium, BG - Bulgaria, HR - Croatia, IT - Italy, AT - Austria, SE - Sweden, RS - Serbia

These are the RStudio packages we install and load to do our calculations.

```
library(tidyverse)
library(vtable)
library(dineq)
library(dplyr)
```

We downloaded from Eurostat our subset of countries sub-regional GDP (nama_10r_3gdp__custom_356493 and population (demo_r_pjanaggr3__custom_3579517_linear.csv) for the years 2000 - 2020. We then calculated the GDP per capita, and named the new data set "GDP_Per_Capita".

```
library(readr)
GDP <- read.csv('nama_10r_3gdp__custom_3564935_linear.csv')
Population <- read_csv("demo_r_pjanaggr3__custom_3579517_linear.csv")

gdpdata <- GDP %>%
  rename(Year = TIME_PERIOD, GDP = OBS_VALUE, Region = geo)

populationdata <- Population %>%
  rename(Year = TIME_PERIOD, Population = OBS_VALUE, Region = geo)

GDP_Per_Capita <- gdpdata %>%
  left_join(populationdata, by=c("Region", "Year")) %>%
  select(Region, Year, GDP, Population) %>%
  mutate(
    GDP_capita = (GDP * 1000000)/Population)
```

To report our descriptive statistics on GDP per capita, we used the summary command. This gave us the following descriptive statistics on the variables GDP, population and GDP capita.

```
      GDP                Population         GDP_capita
 Min.   :    74.55   Min.   :  20320   Min.   : 1087
 1st Qu.:  1738.28   1st Qu.: 164518   1st Qu.:17180
 Median :  5614.05   Median : 273920   Median :25185
 Mean   : 10238.24   Mean   : 406217   Mean   :24191
 3rd Qu.: 10640.23   3rd Qu.: 429030   3rd Qu.:31351
 Max.   :181212.88   Max.   :4355725   Max.   :72062
                     NA's   :771       NA's   :771
```

To calculate the population watertight GDP Ginie coefficient, we used the following command.

```
gini.wtd(GDP_Per_Capita$GDP_capita, weights = GDP_Per_Capita$Population)
```

```
[1] 0.2603924
```

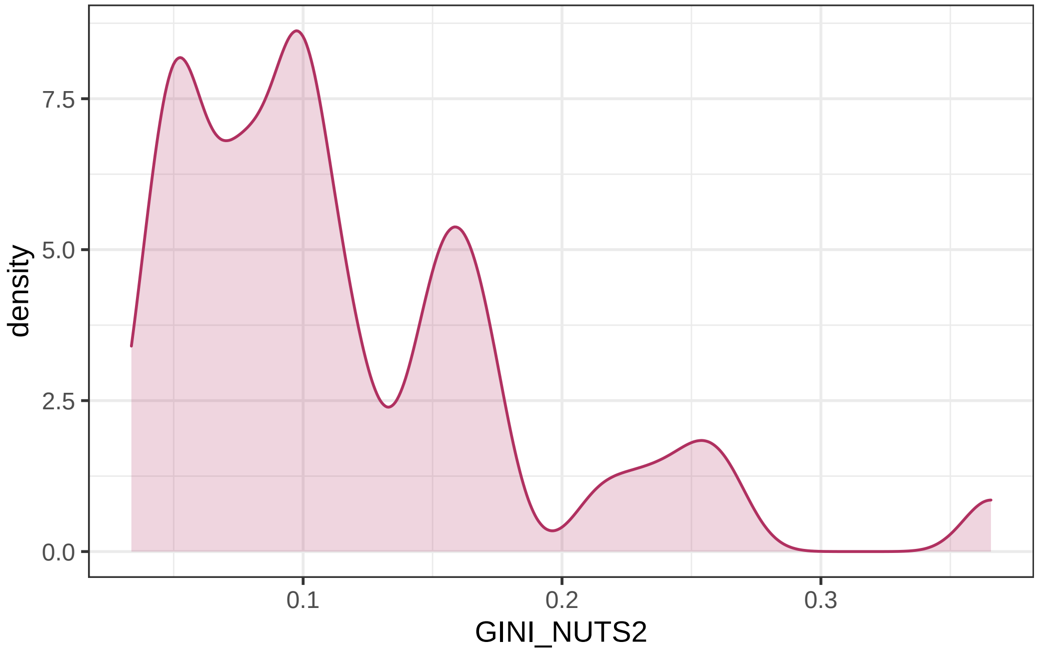
To calculate the population watertight GDP Ginie coefficents for the European NUTS2 level, we used the following commands.

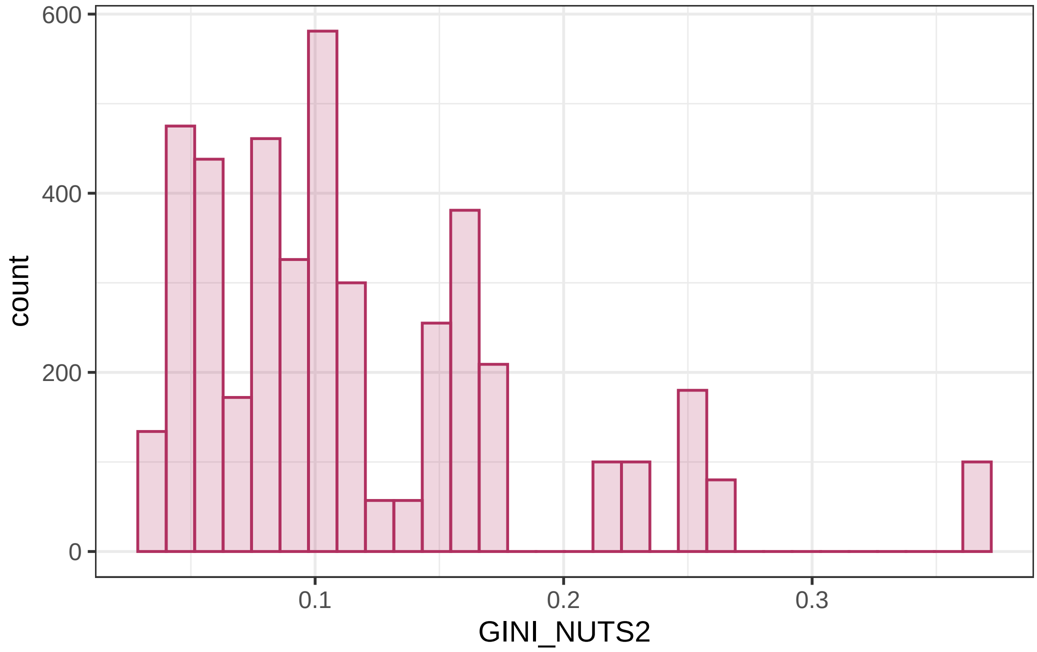
```
GDP_Per_Capita <- GDP_Per_Capita %>%
  mutate(NUTS2 = substr(GDP_Per_Capita$Region,1,4))

GDP_Per_Capita <- GDP_Per_Capita %>%
  mutate(NUTS = substr(GDP_Per_Capita$Region,1,2))

GDP_Per_Capita  %<>%
  group_by(NUTS2) %>%
  na.exclude(GDP_Per_Capita) %>%
  mutate(GINI_NUTS2 = gini.wtd(GDP_capita, weights = Population)) %>%
  ungroup()
```

To summarize the data of the Ginie coefficients, we once more used the summarize command.

```
   GINI_NUTS2
 Min.   :0.03367
 1st Qu.:0.07065
 Median :0.09839
 Mean   :0.11800
 3rd Qu.:0.15525
 Max.   :0.36569
```

For visualization of our data (the Ginie coefficients for the European NUTS2 level of our selected countries), we produced a density plot and histogram, by the use of the ggplot2 package.





Looking at the plot above there is one outlier up against 0.4 with around 100 observations. The same result also seem to occur in the density plot.

"Regional Economic Accounts (Reg_eco10)." n.d. https://ec.europa.eu/eurostat/cache/metadata/en/reg_ec