

# Lec5 In-Class Exercise

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Extracting the data from local drive:

```
my_data <- read_csv("/Users/lucmekouar/Desktop/POLI 3148/!!class files/_DataPublic_/vdem/1984_2022/vdem")
```

```
## Rows: 6789 Columns: 211
## -- Column specification -----
## Delimiter: ","
## chr   (3): country_name, country_text_id, histname
## dbl   (207): country_id, year, project, historical, codingstart, codingend, c...
## date   (1): historical_date
##
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
```

1. Codebook lookup. Look up the codebook, answer the following questions:

i. What indicators regarding the quality of education are available in the V-Dem datasets?

- Educational inequality, Gini (e\_peedgini)
- Education 15+ (E) (e\_peaveduc)

ii. What are the data's coverage (i.e., for which countries and years do we have data?)

The entire VDem dataset covers a total of 202 countries, and spans from 1789 to 2022. Find below a detailed list of which countries are included, and for which year.

```
Countries_and_years_clean_complete_dataset <- read_csv("/Users/lucmekouar/Desktop/POLI 3148/REPO_Luc_POI")
```

```
## Rows: 202 Columns: 2
## -- Column specification -----
## Delimiter: ","
## chr (2): Name ID Coverage, Years
##
## i Use 'spec()' to retrieve the full column specification for this data.
## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.
```

iii. What are their sources? Provide the link to at least 1 source.

Their sources are mentioned in the Bibliographie section of the document called “codebook”. Here is the first source they cite:

” Abad, L. A., Davies, E. A. R. & Luiten Van Zanden, J. (2012), ‘Prices and wages in Argentina, Bolivia, Chile, Colombia, Mexico and Peru (Data appendix in: Between conquest and independence: Real wages and demographic change in Spanish America, 1530-1820)’, *Explorations in Economic History* 49(2), 149–166. URL: [www.iisg.nl/hpw/](http://www.iisg.nl/hpw/) “.

## 2. Subset by columns

- i. Create a dataset containing only the country-year identifiers and indicators of education quality.

Now, I will take only a subset of the V-Dem dataset, namely the file called “vdem\_1984\_2022\_external.csv” to do this exercise as advised in class.

```
educational_quality <- my_data |> select(country_name, year, e_peedgini,  
                                         e_peaveduc) |>  
  rename("Country" = "country_name", "Year" = "year")
```

- ii. Rename the columns of education quality to make them informative.

```
educational_quality <- educational_quality |>  
  rename("Educational inequality" = "e_peedgini", "Education 15+" =  
        "e_peaveduc" )
```

## 3. Subset by rows

- i. List 5 countries-years that have the highest education level among its population.

```
educational_quality |> select(Country, Year, `Education 15+`) |>  
  slice_max(order_by = `Education 15+`, n = 5)
```

```
## # A tibble: 13 x 3  
##   Country      Year `Education 15+`  
##   <chr>      <dbl>      <dbl>  
## 1 United Kingdom 2010      13.3  
## 2 United Kingdom 2011      13.3  
## 3 United Kingdom 2012      13.3  
## 4 United Kingdom 2013      13.3  
## 5 United Kingdom 2014      13.3  
## 6 United Kingdom 2015      13.3  
## 7 United Kingdom 2016      13.3  
## 8 United Kingdom 2017      13.3  
## 9 United Kingdom 2018      13.3  
## 10 United Kingdom 2019      13.3  
## 11 United Kingdom 2020      13.3  
## 12 United Kingdom 2021      13.3  
## 13 United Kingdom 2022      13.3
```

```
#13 rows are showing as these rows are all tied in terms of "education 15+"
# (a measure of education level)
```

- ii. List 5 countries-years that suffer from the most severe inequality in education.

```
educational_quality |>
  slice_max(order_by = `Educational inequality`, n = 5)
```

```
## # A tibble: 5 x 4
##   Country      Year `Educational inequality` `Education 15+`
##   <chr>      <dbl>          <dbl>          <dbl>
## 1 Burkina Faso 1984             97.0             0.301
## 2 Burkina Faso 1985             96.9             0.322
## 3 Burkina Faso 1986             96.7             0.343
## 4 Burkina Faso 1987             96.4             0.364
## 5 Burkina Faso 1988             96.1             0.385
```

4. Summarize the data

- i. Check data availability: For which countries and years are the indicators of education quality available?

```
educational_quality |>
  na.omit(educational_quality)
```

```
## # A tibble: 3,378 x 4
##   Country      Year `Educational inequality` `Education 15+`
##   <chr>      <dbl>          <dbl>          <dbl>
## 1 Mexico     1984             32.7             6.08
## 2 Mexico     1985             32.4             6.22
## 3 Mexico     1986             31.9             6.36
## 4 Mexico     1987             31.4             6.5
## 5 Mexico     1988             31.1             6.64
## 6 Mexico     1989             30.1             6.78
## 7 Mexico     1990             30.0             6.92
## 8 Mexico     1991             29.7             7.03
## 9 Mexico     1992             29.5             7.14
## 10 Mexico    1993             29.3             7.25
## # i 3,368 more rows
```

- ii. Create two types of country-level indicators of education quality

- a. Average level of education quality from 1984 to 2022

```
# index_1_avg_edu_qual is not a good measure of quality as it uses data on the
# average number years of education (15+ year old), which is arguably different
# from quality, but is the closest the author could find in the dataset. Only
# one variable could be used as the other measure relevant, education
# inequality, has different units and therefore both variables would have to be
# normalized first before any operation can be done to combine them.
educational_quality |>
```

```

filter(Year >= 1984 & Year <= 2022) |>
arrange(Year) |>
group_by(Country) |>
summarise(index_1_avg_edu_qual = mean(`Education 15+`), na.rm = TRUE) |>
ungroup() |>
arrange(-(index_1_avg_edu_qual))

```

```

## # A tibble: 181 x 3
##   Country      index_1_avg_edu_qual na.rm
##   <chr>          <dbl> <lgl>
## 1 Germany          12.9 TRUE
## 2 Australia          12.9 TRUE
## 3 United Kingdom    12.9 TRUE
## 4 Canada            12.7 TRUE
## 5 Switzerland       12.7 TRUE
## 6 Japan              12.6 TRUE
## 7 Norway             12.4 TRUE
## 8 France             12.0 TRUE
## 9 South Korea        12.0 TRUE
## 10 New Zealand       11.9 TRUE
## # i 171 more rows

```

b. Change of education quality from 1984 to 2022

```

educational_quality |>
filter(Year >= 1984 & Year <= 2022) |>
arrange(Year) |>
group_by(Country) |>
summarise(index_2_chg_edu_qual = last(`Education 15+`) -
  first(`Education 15+`), na.rm = TRUE) |>
ungroup() |>
arrange(-(index_2_chg_edu_qual))

```

```

## # A tibble: 181 x 3
##   Country      index_2_chg_edu_qual na.rm
##   <chr>          <dbl> <lgl>
## 1 Botswana          5.17 TRUE
## 2 Singapore          4.52 TRUE
## 3 Libya              4.07 TRUE
## 4 Cuba              3.84 TRUE
## 5 Chad               3.82 TRUE
## 6 Egypt              3.82 TRUE
## 7 Jordan             3.82 TRUE
## 8 South Korea        3.54 TRUE
## 9 Saudi Arabia       3.49 TRUE
## 10 Algeria            3.35 TRUE
## # i 171 more rows

```

iii. Examine the data and briefly discuss: Which countries perform the best and the worst in terms of education quality in the past four decades?

Looking at the average national inequality in education, from 1984 to 2022, measured by the number of years of education done on average by citizens at or over the age of 15, Burkina Faso, Niger and Mali had the worse education quality, according to VDem data. Moreover, one can also inquire into the largest shift education quality from 1984 to 2022, where Botswana, Singapore and Lybia arrive as the top 3 positive change in education quality. Note that only one country decreased in education quality: Tajikistan. As it stands in 2022, the 5 countries with the largest average number of years of education done on average by citizens at or over the age of 15 can be found below:

```
educational_quality |> select(Country, Year, `Education 15+`) |>
  filter(Year == 2022) |>
  slice_max(order_by = `Education 15+`, n = 5)
```

```
## # A tibble: 5 x 3
##   Country      Year `Education 15+`
##   <chr>      <dbl>      <dbl>
## 1 United Kingdom 2022         13.3
## 2 Japan          2022         13.2
## 3 Australia      2022         13.1
## 4 Canada         2022         13.1
## 5 South Korea    2022          13
```

Furthermore, from the latest data available (2010), the 5 countries with the least inequality of education (potentially aslo a factor of quality of education) can be found below:

```
educational_quality |> select(Country, Year, `Educational inequality`) |>
  filter(Year == 2010) |>
  filter(`Educational inequality` > 0) |>
  slice_min(order_by = `Educational inequality`, n = 5)
```

```
## # A tibble: 5 x 3
##   Country      Year `Educational inequality`
##   <chr>      <dbl>      <dbl>
## 1 Austria      2010         4.20
## 2 Barbados     2010         5.42
## 3 United Kingdom 2010         6.07
## 4 Australia    2010         6.34
## 5 Denmark      2010         6.49
```

[link to github r markdown file](#)