

# Data Visualisation COM-480

## Milestone II

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### I. CONCEPTION

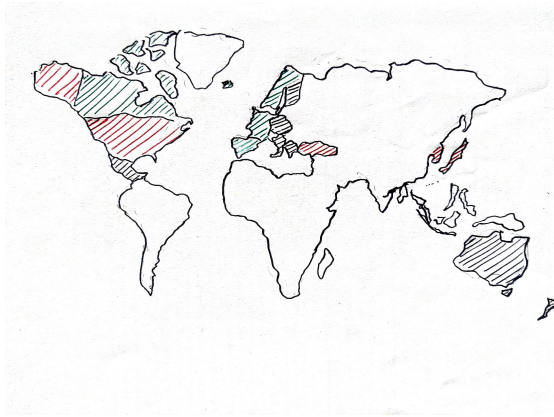
#### A. A map of working hours in OECD countries

1) *Principle:* As explained in the first milestone our project focuses on working time in different OECD countries and their human and socio-economic impacts. Our project is subdivided in three main parts that aim to answer a specific question.

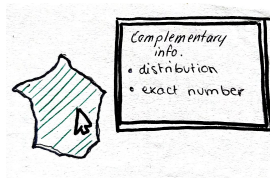
*Where do people work the most and can it be associated with poverty?*

Our first visualisation is intended to show a global picture of our data, its distribution and how it varies from one country to another. It will therefore be a map of the countries studied, which will be coloured according to the country's position when compared to the others (in terms of the number of hours worked per capita). Our aim is to allow the user to see the distribution of working time and particularly between highly unionised countries and the others, or between richer and poorer countries. This will allow the user to be aware of potential patterns between countries.

2) *Sketch:* You can see on Fig. 1a a schematic of the planned visualisation.



(a) Working hours among OECD countries in 2018. Data from the OECD [1].



(b) Detail - window appearing when the cursor passes

3) *Core visualization and extra ideas:* → CORE VISU  
We would like the user to be able to move the cursor over the different countries and see additional data or information on the distribution of the number of hours worked. If time allows, we want to allow the user to visualize data from a specific year of interest thanks to a cursor. The cursor could be moved from one year to another, from 1990 to 2018 (data available)

4) *Dataset and tools used:* For this part the only dataset involved for the map is hours worked (hrs-wk). Additional data may be introduced as the project progresses. Lecture 8 on maps will be useful, as well as lecture 6 on perception colors so the map gives an accurate overview of the distribution when it is visualized.

#### B. Going deeper into details: correlation with poverty rate and GDP/hour

1) *Principle:* Now we want to answer the most spontaneous - according to us - questions about working time. Therefore we present two scatter plots.

*If people work less, will their purchasing power be lowered?*

*Are people more productive when they work less?*

Therefore we present two scatter plots that show:

Poverty rates as a function of hours worked;  
GDP per hours worked as a function of the hours worked.

We have data from 1990 so we would like to make these scatter plots adaptable: the points visualised will depend on the year chosen by the user through a slider. We would see the evolution of the different distributions over time. From the correlations presented in the first milestone, we know that the scatter plots will show a strong positive correlation between poverty rates and hours worked and a strong negative correlation between GDP/hour and hours worked. It led us to design the third visualization.

2) *Sketch:* Please see on fig 2 a sketch of this visualization.

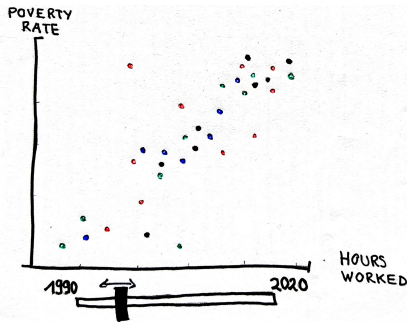


Fig. 2: Sketch: comparison of poverty rates as a function of hours worked - year at choice

3) *Core visualization and extra ideas:*

4) *Dataset and tools used:* We will code this visualization thanks to Vega Lite, following [this example](#).

### C. Multiple variable comparison

1) *Principle:* It is important to us that we show how these correlations should not be seen as causalities. Merging socio-economically different countries leads to an increase of confounding factors (the wealth or industrialization level of the country for example) that may be responsible for the observed patterns. Indeed reducing poverty rate may be due to being in a richer country and not to the reduction of working hours itself.

To controverse our first result from section I-B1 we focus on one country at a time and over the whole studies period. Therefore we will see the complexity of all the variable interactions over time and - hopefully - nuance the impact of changing working time.

This third visualisation will be simple curves as a function of time for the chosen variable and country. The user can choose to view the hours worked, the poverty rate and the GDP/hour over time. Other related variables are also available: we chose unemployment rate, the measure of income inequality and the country's GDP per capita.

2) *Sketch:* Please see on fig 3 a sketch of this visualisation.

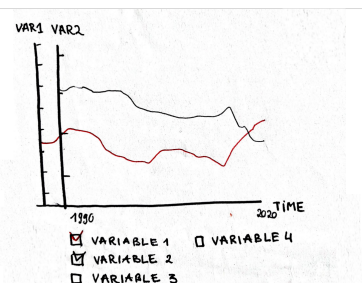


Fig. 3: Mutiple variable comparison over time for a specific country

### D. Other extra ideas

We would like to give the user an idea of the socio-economical status of the countries studies. The classification would follow the definition given by the [World Bank](#) [2] and we would produce an additional visualisation, a donut chart following this example. We would keep the same color as used in the donut chart in the scatter plot from section I-B. The distribution between richer and poorer countries would be more visible.

## II. WEBSITE

Follow [this link](#) to see the first draft of our website.

## REFERENCES

- [1] "Hours worked." <https://data.oecd.org/emp/hours-worked.htm>. Accessed: 2022-06-04.
- [2] "World bank classification." <https://blogs.worldbank.org/fr/opendata/nouvelle-classification-des-pays-en-fonction-de-leur-revenu-2020-2021>. Accessed: 2022-05-05.