EU RISKS OF DEATH

Visual analytics project 2021/2022

Simone Giordano - Greta Aquilina - Daniele Calisi

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01.
INTRODUCTION

WHY VISUALIZE NUMBER OF DEATHS IN EU?

EU COMMISSION

Check what countries need financial support to obtain a more homogeneous territory

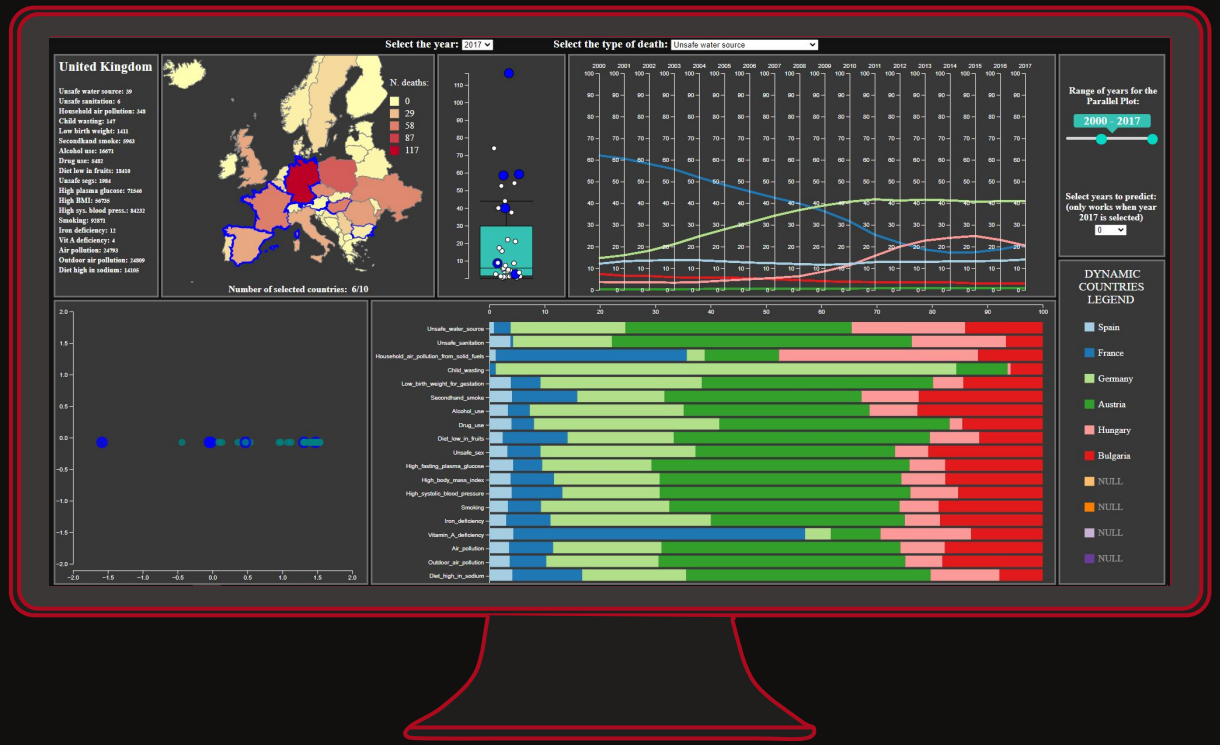
SINGLE COUNTRY

Creating associations among more types of deaths could lead to a better view of the causes of deaths

INDIVIDUAL

A single individual could use the tool to check what are the countries in which there is a better lifestyle

EU RISKS OF DEATH TOOL



02.

DATASET

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The WHO dataset of worldwide Deaths by Country/Risk factors shows the total annual deaths due to each risk factor, by country.

This dataset has been downloaded from Kaggle website.

DATA PREPROCESSING

- Shrink the original dataset by removing all the countries that were not in our target (not geographic EU countries)
- Cutted out a subset of the initial causes of death, because irrelevant (too few deaths) for our case or because too many values were missing

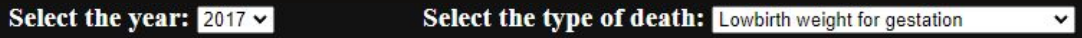
DATA RESULTS

Entity	Year	Unsafe_water_source	Unsafe_sanitation	Household_air_pollution_from_solid_fuels	Child_wasting
Albania	1990	50.13	30.95	1337.65	1022.82
Italy	2012	35.21	25.71	389.16	216.92
Spain	1996	13.76	9.54	1654.45	111.01
Serbia	1998	11.09	5.22	4878.73	75.12
Poland	2016	80.17	14.13	2482.51	108.98
Spain	1995	13.46	9.68	1777.27	109.48
Poland	2015	92.23	16.5	2500.39	109.88

2.1. Snippet of dataset

AngeliniSantucci index = 1092*21 = 22932

AGGREGATIONS



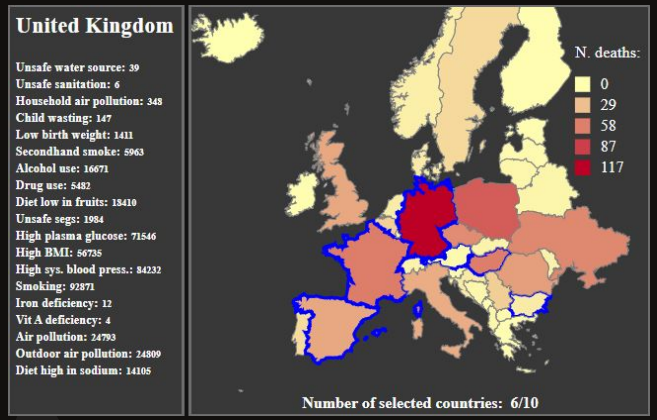
2.1. Aggregation selectors

Dataset entries can be aggregated by year and by type of death

03.
VISUALIZATIONS

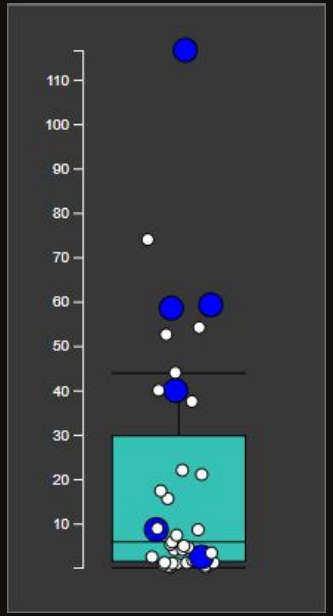
EU MAP

- The EU map allows to visualize the number of deaths per year and per type of death chosen. This is done thanks to a color scale taken from ColorBrewer2. The more the country tends to RED, the more there are deaths.
- The legend is dynamic generated based on the number of deaths in the specific case.
- The Map has the support of Mouseon feature, where dynamically changes the column on the left based on the hovered country.
- Every country can be selected by pressing ctrl + left click. Reset it with left click or by selecting the 11th country.



BOXPLOT

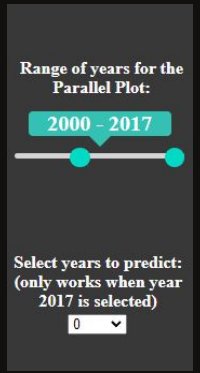
- The boxplot is needed to have information on the variability or dispersion of the data.
  A Boxplot is a graph that gives a good indication of how the values in the data are spread out, that are the number of deaths for a single cause of death and year for each country.



PARALLEL PLOT

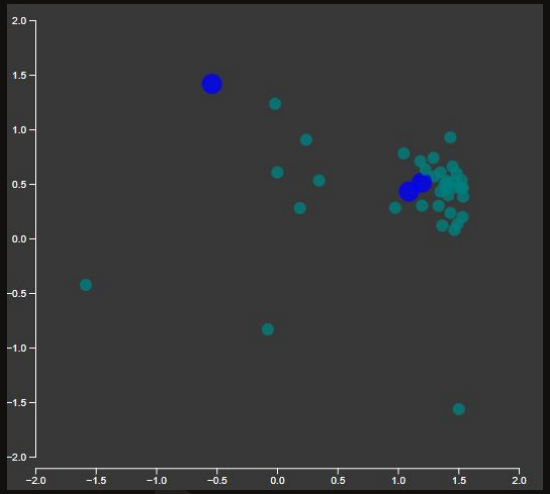
- Each vertical line represents an year. The user can choose the interval of years with a double slider on the right.
- To have a better comparison among the selected countries, the values, that are the number of deaths per year, are normalized in a percentage scale.
- Each line can be hovered to be highlighted

- In case the user selects the last year present in the dataset, i.e. the year "2017", on the right, appears the possibility to perform a prediction of the number of deaths for the number of years selected by the user, augmenting the number of vertical lines. Those values are calculated by the tool and are not in the dataset.



MULTIDIMENSIONAL SCALING

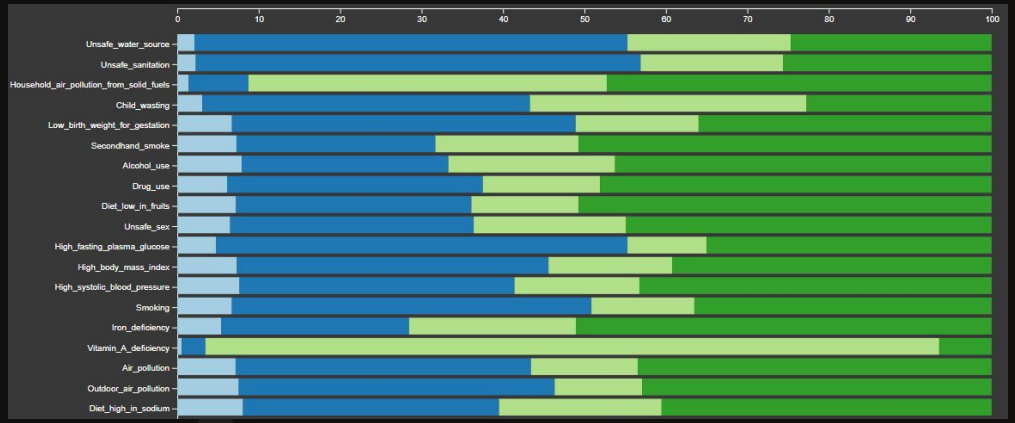
- The MDS plot visualizes the dissimilarity among all the countries by year and type of death chosen.
- This graph supports the brushing, which enables the selection of multiple countries (max 10), and hovering to visualize the name of the hovered data point



NORMALIZED BARCHART

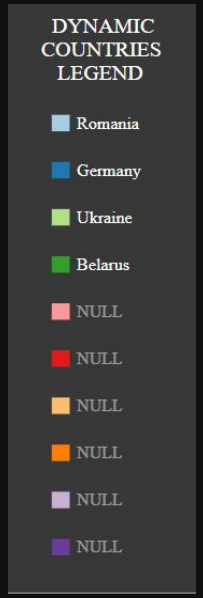
- Like the Parallel plot, this chart starts empty and is filled just when the user selects the countries from the Map or MDS.
- On the y axis there are all the type of deaths. The entries of the selected countries are first normalized and then visualized in the chart.

- Each bar, with a specific colour present in the colour legend on the right, can be hovered to check the name of the country, the percentage relative to the countries selected and the absolute number of deaths for the specific type.



COLOUR LEGEND

- Everytime the user selects some countries, from the map or from the MDS graph, the dynamic countries legend changes, adding or removing the countries selected.
- The colour in the legend is then translated also in the barchart graph and in the parallel chart



04.
CONCLUSIONS

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- We introduced this tool to give a better understanding of the several causes of deaths in Europe in order to support a better prevention in the future years.
- A user can investigate what are the main causes of deaths in each european countries and the dissimilarities among all of them.

THANKS FOR THE ATTENTION!

- GRETA AQUILINA - 1772359
- DANIELE CALISI - 1752156
- SIMONE GIORDANO - 1772347

GitHub Repo available HERE