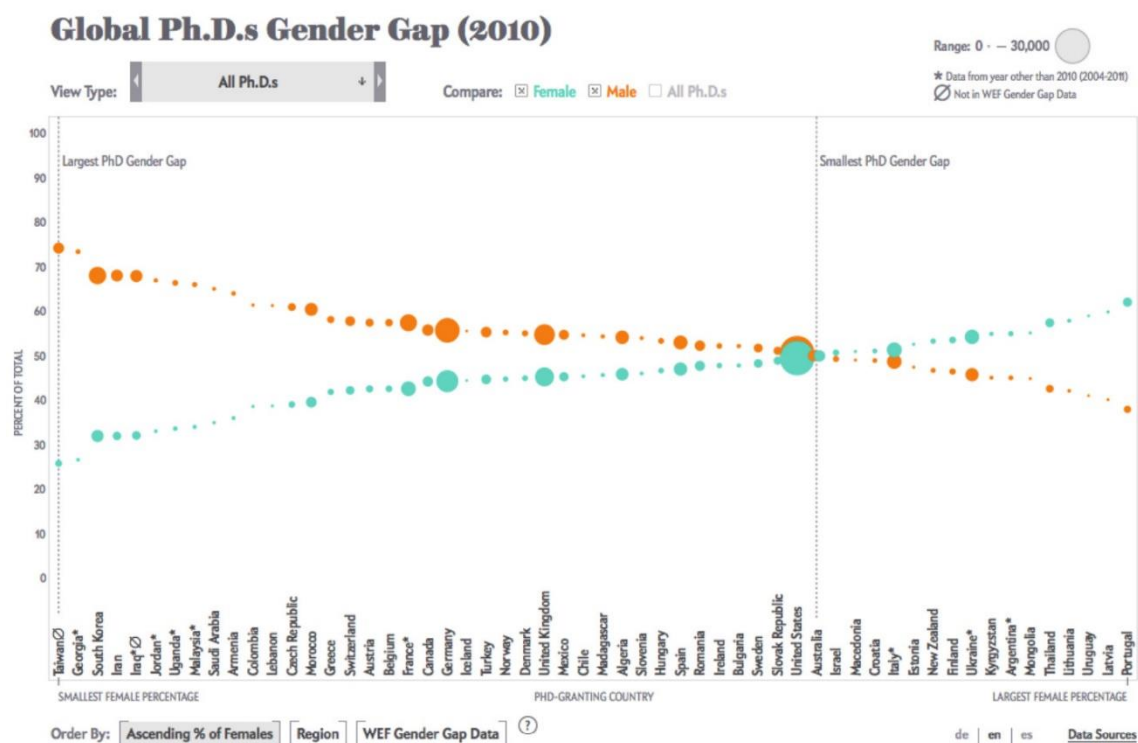


The data set *phds_country.csv* contains the number of male and female PhD graduates by country, which comes from the National Science Foundation in the US. Using the provided data set, create a Jupyter notebook to answer the following questions using only the Pandas, Matplotlib and Seaborn and ipywidgets libraries.

You need to provide me with the Jupyter notebook (.ipynb) file.

Recreate the interactive experience in the visualization, “Global Ph.D.s Gender Gap (2010)” published by Scientific American, which can be found here:

<https://www.scientificamerican.com/article/how-nations-fare-in-phds-by-sex-interactive1/>



This visualization shows the number of male and female PhD graduates for a number of countries throughout the world. The x-axis is the list of countries, and the y-axis is the percentage of total graduates for that country, such that the male and female data points total 100%. The size of each data point reflects the number (not percent) of male or female graduates in that area for that country.

Your visualization should include interactive elements that function the same as they do in the original. Specifically, the key interactive features that must be included are:

- A dropdown menu to filter to the PhD area.
- Three checkboxes to toggle on/off the display of male graduates (orange) and female graduates (teal) for the selected PhD area, and the background display of all PhD data (grey).
- Two toggle buttons for the ordering of the data - one for “Ascending % of Females” and a second for “Region”. This data set does not contain WEF Gender Gap Data, so you can ignore the third toggle button.

Make sure that the sizing of the data points are consistent as different areas are selected. Areas with fewer PhDs should have smaller data points.

You do not need to match the exact visual look of the original visualization (which would be hard with ipywidgets). Specifically:

- The arrangement and positioning of the interactive elements does not need to match. They just need to be present and work correctly, whichever position or arrangement they are in.
- The vertical annotations marking the country with the smallest PhD gender gap, or the region divisions, does not need to be present. The ordering by region should still work like the original though.
- Mouseover popup dialogs on specific data point does not need to be included.
- The left and right arrows on either side of the dropdown menu do not need to be present.