Gender Equality in Employment

TEAM: PowerPuff Girls
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Introduction

Women's labor-force involvement has increased dramatically since the second half of the twentieth century. Women are working longer hours and enrolling in more higher education programs in increasing numbers. Despite this development, major income disparities between men and women remain, particularly for women of color.

Discussions about the gender pay gap have dominated discussions in the Western world for several decades, but the issues surrounding women's economic status and roles in the workforce are far more nuanced, incorporating issues of race, class, consumerism, and ongoing shifts in the legal status of women in subtle and often invisible ways. Even though women have increased their presence in higher-paying jobs traditionally dominated by men, such as professional and managerial positions, women as a whole continue to be overrepresented in lower-paying occupations relative to their share of the workforce. This may contribute to gender differences in pay.

Reading this report (Economic inequality by gender - Our World in Data) regarding data and studies on economic inequities between men and women motivated us. As the gender wage gap is frequently mentioned in political discussions, policy reports, and the news, as a data-driven individual, it would be interesting to utilize data to study what it actually means. Furthermore, our interest stems from our own believe in gender equality.

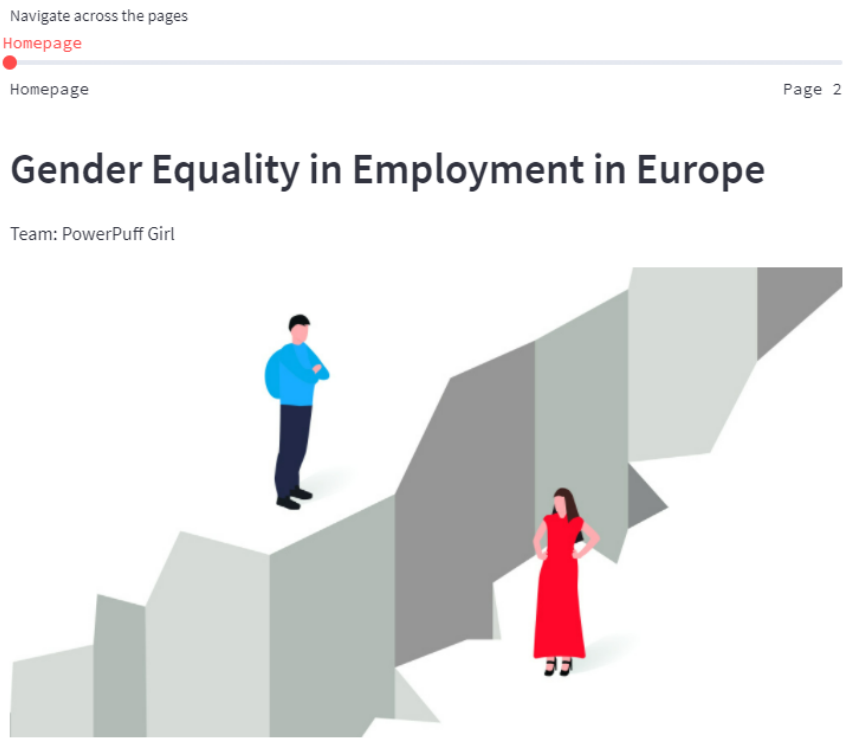
Among all datasets, we thought this one had the most significant societal impact. Furthermore, as all four members are women preparing to enter the job market, gender inequities in the workplace are an issue we are very interested in, so that we can learn what sort of jobs are available to us.

This tool can be used by many sources from schools to teach the children the meaning of gender inequality to newspapers and governing bodies that highlight this issue key decision making processes. This tool allows the users to compare countries on gender inequality on different key metrics such as number of maternal and paternal leaves, representation of women in companies and parliaments.

We utilized Python to develop it, and the key packages we used were Altair, Streamlit, Pandas, and Vegadata. We chose this software and these packages since we were all new to this environment and wanted to learn more about creating interactive visualizations in Python, and the labs held during class were quite inspiring.

Feature description

When you first access the tool, you will see an opening page that displays the main theme of our tool. You can access the pages using the slider at the top which takes you to the next pages.

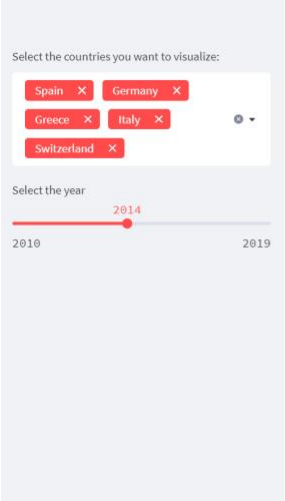


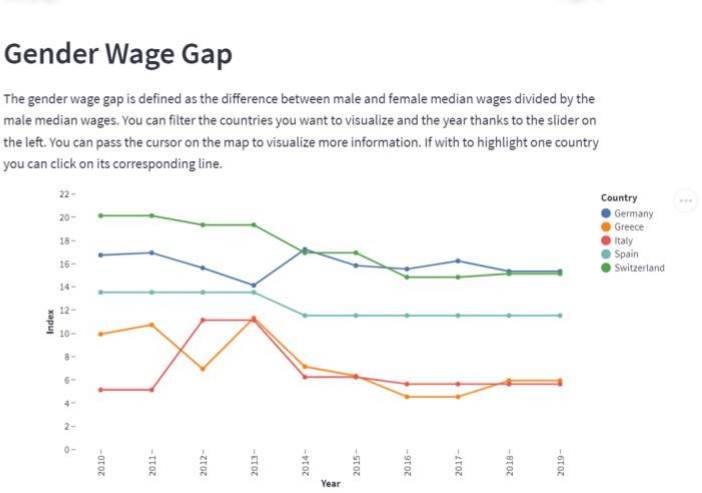
The tool is divided into two major pages, each of which highlights six key metrics that directly or indirectly reflect economic disparity in European countries. The indicators are:

1. Gender Wage Gap
2. Weeks of Maternal Leave
3. Weeks of Paternal Leave
4. Share of Female Managers
5. Share of Women Holding Seats in Parliaments
6. Share of Women Holding Seats on Boards of Publicly Listed Companies

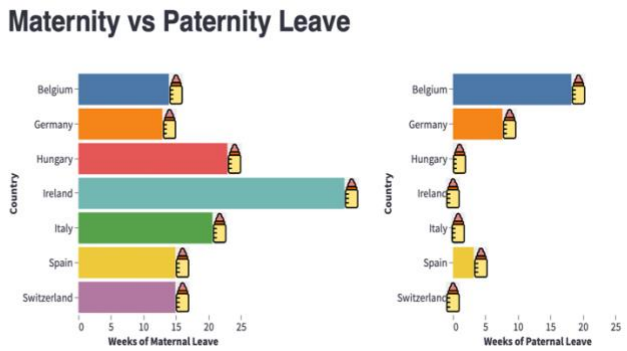
Page 1 focuses on the unequal treatment at work between male and female employees. In the first graph, the user is able to pick the countries for which he/she wants to see the wage gap evolution from 2010 to 2019. Selecting multiple

countries, the comparison is obvious. The higher the line of the country in the chart, the bigger the wage gap.





In the second graph (babybottle bar plots), selecting the year through the slider, we compare the length of maternity and paternity leaves in weeks, across the already selected countries. Since our goal here was to compare the evolution for different countries, we used a line to show this change over the period. In addition, we used a color for each country to distinguish them from each other. We think a line plot is very informative when it comes to showing evolution over time.

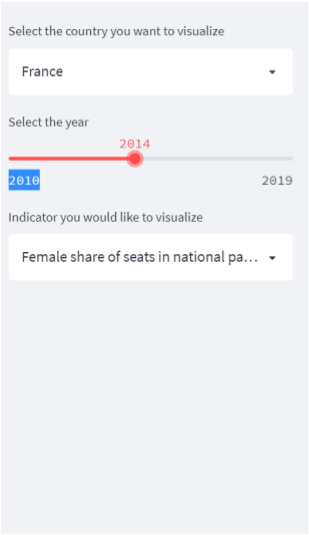


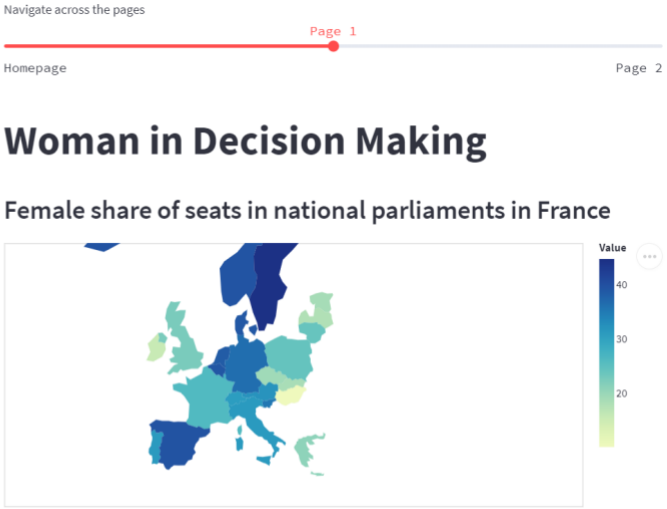
For page 1, we also included and made it bi-directional: this means that clicking on the line chart for a particular country would highlight the bar charts below for the maternal and paternal leaves. Here also, we used color to differentiate the countries. Since the interaction is bidirectional with the previous graph, it made

sense to us to have the same color coding in both graphs. Furthermore, this bar chart allows the user to compare the indicators of these countries using the length.

Page 2 describes the role of women in decision making. In Assignment #2, we had seen that there is a positive relationship between the number of women in powerful positions and the impact that they have on laws and regulations concerning the disparity in wages. We use the 3 indicators (Share of Female Managers, Share of Female Holding Board seats and Share of Women having seats in Parliaments) one at a time to see the changes in this percentage across EU over the decade (2010-2019). Upon sliding through the years, we see that color on the map intensifies. This shows that more percentage of women are getting high-profile jobs at senior positions and getting more voice in the parliament.

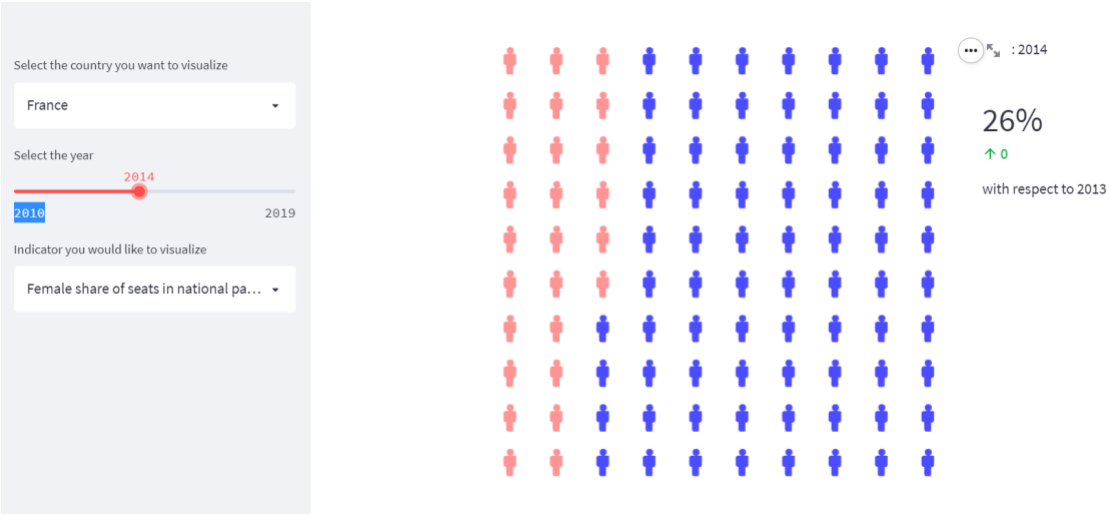
The map allows us to give a holistic view of the percentages across EU and hence we thought this was a perfect way to give an overview of the indicator before deep diving into country specific changes. Here again, we used color encoding with darker colors for countries that have a higher value of the selected indicator. Instead of color, we considered using circles with different sizes to indicates the disparities between countries, but we decided at the end that color is more suitable.





Upon see the overview, we decided to analyze the indicators at a country specific level. In the second graph, we use a version of isotype visualization that allows us to see the performance of these 3 indicators at a country level. To do this, you can select the country you wish to analyze, you then pick the indicator that you wish to evaluate out of the 3 on women in decision. Here you can also see the percentage increase on decrease from one year as compared to the previous year on the right side. Pink represents women and blue represents men. The more blue there is, the

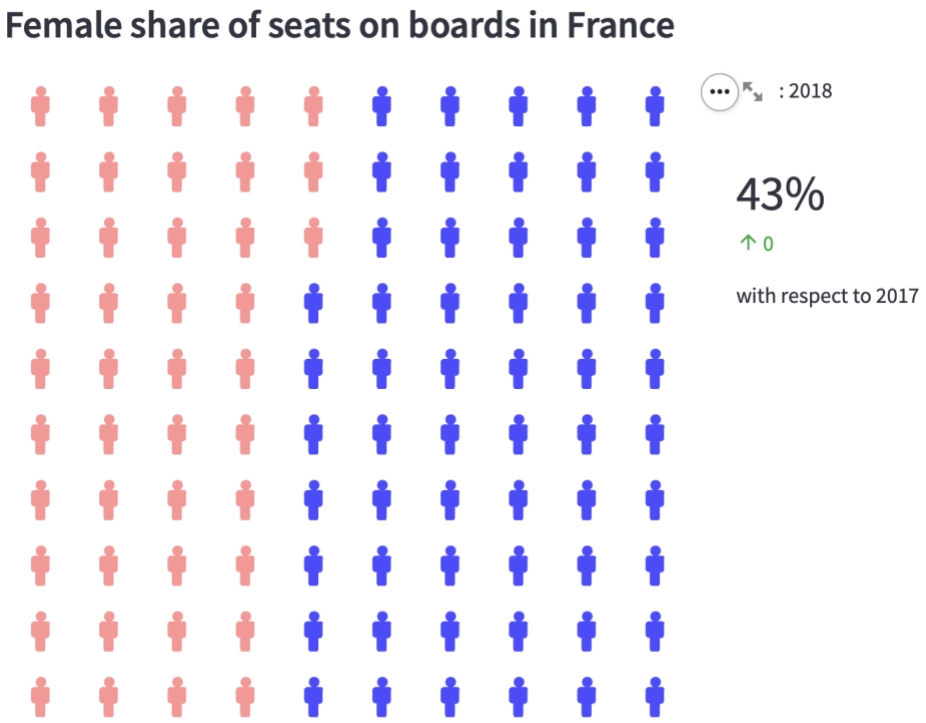
higher the share of men. Since the shape of both is the same, using a color encoding would allow the user to distinguish the proportions.

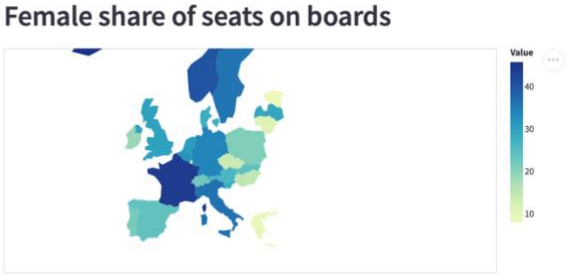


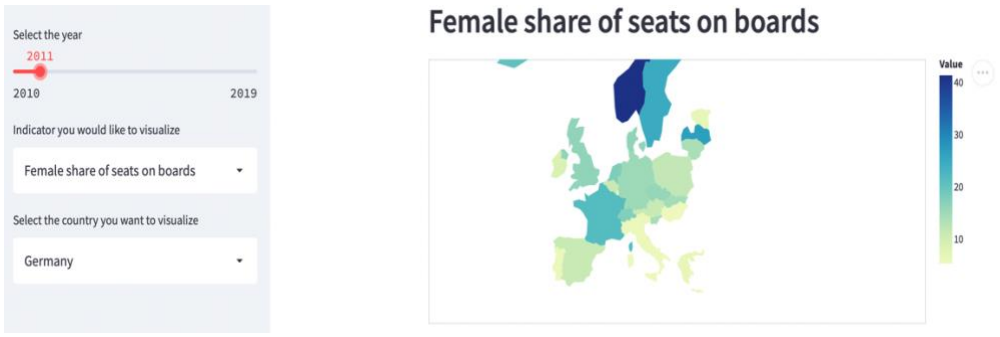
Interesting Findings

Handling this big dataset and creating visualizations were really insightful for us. Some of our findings were surprising.

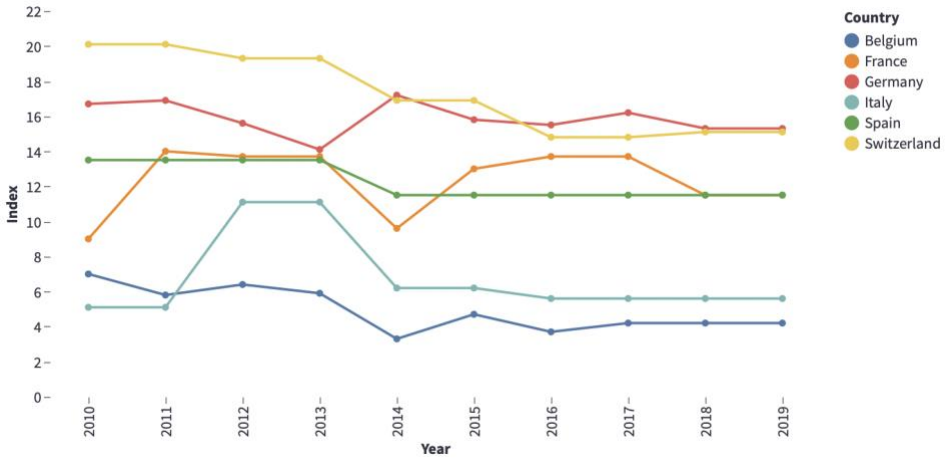
- The main highlighting point for the graphs for women in decision making was to see an overall increase in the percentage of women being represented across EU. For example, based on the indicators “female share of seats on boards”, we notice a 43% increase of the women share in year 2018 with respect to year 2017 in France. Moreover, for this indicator, the map shows darker colors in year 2018 compared to year 2011 as seen below.



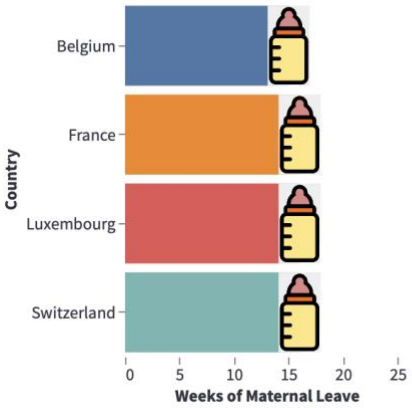




- As for the wage gap, in most countries there's a decrease through the years, but there are some surprising exceptions such as France where the gap increased in 2010 and again between 2015 and 2017 as seen in the graph below. This was also the case for Italy between 2011 and 2013. It could be interesting to investigate the factors that could have affected the gap, as next steps.



- It was interesting to find out that in many countries paternity leave entitlement for new dads is 0 weeks, while in others (eg Belgium and Luxembourg), it is higher than the maternity one. As we had already seen in assignment #2 there's some small correlation between the wage gap and the length of paternity leave.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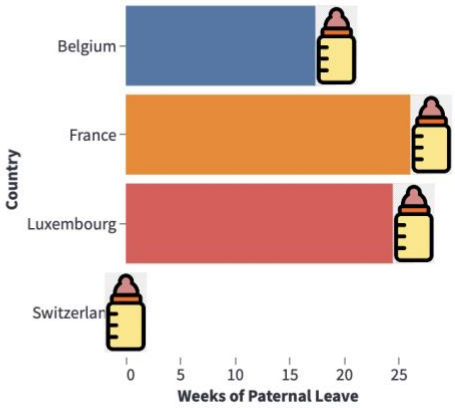
Weeks of Maternal Leave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Weeks of Paternal Leave

Members Contributions

Vivian Koutroumani

Worked on the babybottle graphs, app deployment, report and video

Nevina Dalal

Worked on the map, app deployment for page 1, report and video

Basma Wehbe

Worked on the map, app deployment for page 1, report and video

Chiara Palma

Worked on setting up streamlit, deploying the isotype visualization for decision making indicators, deploying line chart for wage gap index for page 1, debugging the code, report and video