Women In The Workforce

Of the many successes the wave of feminism has brought us, a vital, but often underappreciated success has been the increase in the number of women in the labor force, not just in the United States, but in the world as a whole. It was not until 1970 that the last few laws that banned women from the labor force were repealed and slowly but steadily women entered the workforce.

To take a closer look into how many women comprise the labor force in the world and how far we have really come, we took to the female labor force participation data from *The World Bank's* abundance of economic data. This file contained female labor force participation for numerous years, however, a lot of the data for past years was missing. So we filtered out data and used 2014 data. This data was then put into one of five buckets based on the percentage of women in the workforce in a specific country. The first bucket ranges from 0 to 20% of women in the labor force while the last one ranges from 80 to 100% as seen on the map. The darker the pink, the more women in the labor force. These colors were selected from colorbrewer2.org. To effectively display this information visually, we made use of json and d3. Our code reads the json file and selects country paths in json to draw the country. Based on the defined stoke and filter, the fill color is changed depending on the female labor participation data by country name in *"WomenInWorkforce.csv"*.

After successfully mapping the female labor participation percentage onto the world map, we went a step further. We cross referenced countries with their Human Development Index (HDI) rank. The HDI is a metric that captures achievement in key dimensions of development in human beings. This includes three main aspects which are health, education and standard of living. Based on the HDI rank, countries are classified as those with high development, medium development or low development. Once we combined these two datasets by country name using the statistical package R, we saw that countries such as Madagascar, Rwanda, Malawi, and Mozambique, those with the highest HDI rank (implying they are countries with very low development) had the highest percentage of women in the workforce, more than 80%, while Norway with an HDI rank of 1, a very highly developed country, had 61.2% of women in the workforce in 2014. This really surprised us. This seemingly conflicting data all started to tell an interesting story when we added our final dataset to the mix, adult female literacy percentages.

The literacy data was also from *The World Bank's* databank. Again, we filtered out all the other data except that of 2014 due to abundance of missing values in previous years. Since some of the 2014 data also had missing data points, the rest of the data was collected from Nation Master's Education section. This data was merged with our existing dataset using R by country name. The scatterplot shows this female literacy data in comparison to the female participation rate. The colors were kept consistent with those from the map and shapes were used to show the difference between a country with high human development as opposed to one with low human development or medium human development. Linear scales were used. In addition, to prevent the audience from being overwhelmed with information, some points on the scatterplot were made darker than others. This sample was selected on the basis of countries that had very high human development, very low human development, and ones that we thought the audience would find interesting from the map.

We found that countries with women comprising about half the labor force and high literacy rates are ones that had the higher HDI ranks, but those with higher women in the labor force and low female literacy rates were considered to have very low development based on their HDI rank. The five countries with the highest female labor force participation percentages are all in Africa. They are Madagascar, Rwanda, Mozambique, Malawi, and Zimbabwe. These countries also have relatively low literacy rates and are classified as ones with a low human development index. On doing some research, we found that majority of these countries have a lower male-female ratio in comparison to countries like China, India, and the United States. In China and India, female infanticide also adds to the low percentage of women in the population, and thus the workforce. China is expected to have 30 million more men than women by the year 2020. Thus, in comparison to other countries, African countries have higher representation of women in their population. In addition, in these African countries, males are more likely to have waged jobs in comparison to females. That is, majority of women, while part of the workforce are not compensated for their work due to lack of an education, thus cannot improve their standard of life or education status.

As we strive to make the gender equality a reality in the workforce, education of women should be considered a priority to truly ensure development of society. It is vital to ensure not just an increase of women in the workforce, but an increase in the literacy rate of women to truly reach development.

Sources:
Female Literacy percentage data: http://data.worldbank.org/indicator/SE.ADT.LITR.FE.ZS

Female labor force participation percentage data:
http://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS

Human Development Index Data: http://hdr.undp.org/en/data

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