Abstract

We know that world over the status of women varies to a great degree from region to region. Also, different aspects based on which the plight of a woman vary are population, culture, education level of the society, superstition, presence of social stigmas, alcoholism, economy of the geographic regions, job opportunities, etc. However, the holistic situation of women is considered to be better in economically and industrially developed countries as opposed to lesser-developed or developing nations.

To visualize the plight, we can take multiple social variants and display them against each other in order to draw an objective comparison.

1. Introduction

Gender statistics are defined as statistics that adequately reflect differences and inequalities in the situation of women and men in all areas of life (United Nations, 2006). Gender statistics reflect gender issues, that is, questions, problems and concerns related to all aspects of women’s and men’s lives, including their specific needs, opportunities and contributions to society. In every society, there are differences between what is expected, allowed and valued in a woman and what is expected, allowed and valued in a man. These differences have a specific impact on women’s and men’s lives throughout all life stages and determine, for example, differences in health, education, work, family life or general well being.

Producing gender statistics entails disaggregating data by sex and other characteristics to reveal those differences or inequalities and collecting data on specific issues that affect one sex more than the other or relate to gender relations between women and men. Gender statistics should adequately reflect differences and inequalities in the situation of women and men.

The aim of my project is to be able to compare the gender statistics for one developed country (possibly United States or Germany, etc.) and one developing nation (eg. India, Bhutan, Hungary etc.) and draw a visualized comparative analysis between both countries by using multiple statistical indicative variables such as employment, marriage age, literacy rate, politicians by gender, child-bearing, gender ratio, enrolment in education, years of schooling, gender parity indices, HIV and AIDS prevalence.

This will help us in understanding whether the holistic development of a woman is occurring globally at all and if it is dependent on the economic development of the
country. We will also be able to draw comparisons between specific factors and be able to deduce that in which region, what change in imperative.

2. Overview

In order to be able to get into the fine details of the project, I plan to give an overview of the entire project as a whole to get a bigger idea of the implementation of this particular visualization problem.

2.1. Countries Selected

The comparison shall be between 7 countries. The selection of the countries was done on the basis of their GDP (nominal) according to the list of the International Monetary Fund published for the year 2014. Thus we will one country from each GDP bracket. The countries in order of their GDP rank are as follows:

- United States of America (1)
- India (9)
- Portugal (45)
- Lebanon (80)
- Iceland (112)
- Haiti (138)
- Bhutan (153)

2.2. Comparison Variables

The topics that are being considered for comparison shall be subcategories of major fields. They are as follows:

- **Health**
  - Maternal Mortality
    - Maternal mortality ratio
  - Child-Bearing
    - Adolescent fertility rate
    - Total fertility rate
  - HIV/AIDS
    - Women’s percentage share of HIV/AIDS
    - Men’s percentage share

- **Families**
  - Legal Age of marriage, by gender
  - Marriage
    - Percentage of population aged 15-19 years ever married, by gender
    - Mean age of marriage, by gender

- **Education**
  - Literacy
    - Adult (15+) literacy rate, by gender
    - Youth (15-24) literacy rate, by gender
  - Tertiary Education
    - Women’s share of tertiary enrolment
• **Work**
  - Distribution of labour force by status in employment
    - Percentage employees, by gender
    - Percentage employers, by gender
    - Percentage own-account workers, by gender
    - Percentage contributing family workers, by gender
  - Women’s wages relative to men’s
    - Women's wages in manufacturing as a percentage of men's wages
  - Women legislators and managers
    - Women’s share of legislators, senior officials and managers

• **Political decision making**
  - Percentage of parliament seats in Single or Lower chamber occupied by women

3. **Visualizing the Data**

The page shall display a navigation menu with each of these headings and subheadings. Clicking on each one of the subcategories would navigate a user to the appropriate page where that data is visualized for all the seven countries in decreasing order of their GDP.

The page shall also display appropriate instructions about the project to help in understanding the data better.

3.1. **Visualizing Health**

The component of health is imperative in being able to understand the situation of women in a particular country. Bad health of women gives a strong implication of lack of respect, low standing in society and debilitating future of the country.

3.1.1. **Maternal Mortality**

Maternal Mortality Ratio (MMR) is number of maternal deaths for every 100,000 live births during a period. As we are comparing only one variable, which is the MMR, this can be visualized using a bar chart with the horizontal axis being the country and the vertical axis being the MMR.

This can be made more interactive and the user can take away more if we are able to add a sorting to this bar chart where we can sort values of the MMR based on the GDP to see the trends in maternal mortalities and draw conclusions.

3.1.2. **Childbearing**

The adolescent fertility rate is defined as the number of births per 1,000 women ages 15 to 19. Having children this early in life exposes adolescent women to unnecessary risks. Their chance of dying is twice as high as that of a woman who waited until her 20s to begin childbearing.

For every country, in order of the GDP, there will be a grouped bar chart that displays, the adolescent fertility rate versus the fertility rate for every country.
3.1.3. HIV/AIDS

To show the percentage of women in a country suffering from HIV/AIDS, it will be useful to have simultaneous pie charts of all the countries to be able to gauge which country has affected its women the most with HIV/AIDS.

3.2. Visualizing Families

Looking at the variables that fall under families, one can get a better idea about the status of a woman in a household. As the household of a country is a window into the society, a woman’s status and privileges can become clear.

3.2.1. Legal age of marriage

To visualize legal age of marriage, a sort of interactive scatterplot where a circle represents a woman, a square represents a man and the color represents the country seems to be adequate.

3.2.2. Marriage

A grouped bar chart for all the countries, which shows the percentage of men and women married in the age of 15-19, and hovering over each bar, gives the mean marriage age for that country.

3.3. Visualizing Education

Education in women is a variable that determines the progress of a nation. Women need to be as well educated as men if not more so, to make a nation progress on the path of prosperity, employment and creativity.

3.3.1. Literacy

The variable of literacy has 4 components associated with it. Visualizing this data with bullet charts would be appropriate. One bullet chart for each country with men, women and total percentage values present in different colors.

3.3.2. Tertiary Education

As the variables are only percentages on men and women, I intend to you’re a matrix of pie charts to display this.

3.4. Visualizing Work

Work provides direct implications towards the extent to which women contribute to the economy of a country. This, to a great degree implies social freedom and financial independence of a woman.
3.4.1. Distribution of labour force by status in employment

A parallel coordinate plotting with colour being indicative of the country and solid and dashed lines signifying men and women respectively would be an appropriate method to depict this information.

3.4.2. Women’s wages relative to men’s

The women’s percentage wages could be depicted using line charts or area charts.

3.4.3. Women legislators and managers

To depicts percentages of women legislators and managers, a star plot could be considered where each axis can be considered to be one of the countries.

3.5. Visualizing Political decision-making

It is important for women to be a part of the political decision making process to be able to give their unique perspective on every policy and be able to raise issues about women in the society.

3.5.1. Percentage of parliament seats in occupied by women

This data can be visualized using a timeline, which would symbolize the change in the number of women in parliament over the years.

4. Tools Used

**D3.js** is a JavaScript library for manipulating documents based on data. **D3** helps you bring data to life using HTML, SVG, and CSS. D3’s emphasis on web standards gives you the full capabilities of modern browsers without tying yourself to a proprietary framework, combining powerful visualization components and a data-driven approach to DOM manipulation. **D3** allows you to bind arbitrary data to a Document Object Model (DOM), and then apply data-driven transformations to the document. For example, you can use D3 to generate an HTML table from an array of numbers. Or, use the same data to create an interactive SVG bar chart with smooth transitions and interaction.

5. Conclusion

One would be able to draw some conclusion about whether the GDP or economic stability of a country determines whether the women of that country will have a better standard of living than anywhere else. We would be able to recognize some trend between the economy and standard of living of women per country.
6. Future Work

To be able to make this study more conclusive, we should be able to add more parameters to our list of variables such as domestic violence, crime against women, women in defense, etc. We should also create the visualizations for more countries keeping their GDP in mind to find a definitive conclusion about the trend.

7. References


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