

Women's Well-Being Around the World

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ABSTRACT

Women have historically been discriminated against in many countries, although societies have been changing in recent years to be more accepting—progress does not come equally to all. To understand why some countries are better for women, we looked at the WPS index, PRIO Conflict Recurrence Database, and the Gross National Income per Capita of each country. Many of the countries that scored high in the WPS index were “first-world” countries. Many of the first-world countries had less recurring conflict years. However, just because a country does not have many conflict years or great wealth means that women are treated well there. Each parameter impacts women's well-being differently, but together a more compelling story begins to form. Ultimately, gender discrimination compounded with other factors, such as conflict and wealth, continues to impact the lives of women today.

KEYWORDS

Visualization; Conflict; Money; Wealth; Gender; Well-being; Publication; Collaboration

1 INTRODUCTION

Imbalance in Society

The impact of gender inequality continues to permeate in society through the perpetuation of traditional gender roles and gender stereotypes [3]. Even as women begin to gain more legal rights, cultural norms can still stand in the way to true gender equality. In this paper we will explore what factors can impact a woman's well-being in a nation, and how a country's wealth can impact a woman's experience there. Conflict causes loss of life, wellbeing and property and is often measured in terms of such direct indicators[16]. One of our teammates belongs to Kashmir— the most militarized region in the world.

Although the conflict in Kashmir has always been counted by the civilians and armed forces casualties, there is less acknowledgement of other slow gender-based

insidious outcomes of conflict. In addition, a woman's financial independence and the country's overall wealth also plays a role in how well she is treated by society.

2 RELATED WORK

Conflict

The women in conflict zones are impacted due to a lack of agency and platforms to raise their voices. In addition to having to worry about survival women can find themselves are the target of gender-based violence—arbitrary killings, sexual violence, torture, and forced marriages [10][16]. Gender based violence, and intimate partner violence is also more common due to the breakdown of social and family structures, and a normalization of gender-based violence during the conflict [4][7][16]. Even if women are never attacked, living with the fear of being a victim of gender-based violence remains to be a stressor [17]. Conflict exacerbates existing trends, making a conflict-ridden community one very dangerous for women to live in. The impact of conflict is more pronounced when the duration of the conflict increases.

Wealth and Well-Being

Men who lose their jobs are more likely to inflict domestic violence, while women who lose their jobs are more likely to become victims. Men who lose their jobs are 30% more likely to inflict violence on their partners at home, according to a study conducted in Brazil [9]. This is because job loss triggers income loss, and an increase in potential time at home. The loss of income creates stress within the household,

while more time at home increases exposure to the risk of domestic violence. Additionally, it is estimated globally, for every \$1 spent on addressing unmet family planning needs there is a \$120 return in health and economic benefits. Investing further in women's equality could add between \$12 trillion and \$28 trillion to global growth [12].

3 METHODS

In this section, we describe the data we collected, cleaned, and how we analyzed it.

3.1 Datasets

Women's Peace and Security Index

We obtained the WPS Index data [7] from Georgetown Institute for Women, Peace and Security for the years of 2021–2022. The Index has ranked 170 countries on the 11 indicators: inclusion (education, employment, cell-phone use, and financial inclusion), justice (parliamentary representation, discriminatory norms, son bias, and legal discrimination), and security (organized violence deaths, perception of community safety, and intimate partner violence) [6].

PRIO Conflict Recurrence Database

The conflict episodes identified in the PRIO Conflict Recurrence Database follow the state-based conflicts identified by Uppsala Conflict Data Program (UCDP) data, but are extended to include all violent events related to that conflict, rather than relying on the commonly used 25-death threshold. When there is at least one calendar year between the last event in the previous episode, and the first event in the following episode the conflict is counted as recurring [5]. This is what distinguishes it from the organized violence criterion in the WPS index, because the WPS index only measures organized violence deaths in a given year. For state-based conflicts, 25 battle-related deaths per incompatibility—or distinct conflicts—are needed for inclusion in the PRIO Conflict Recurrence Database. For non-state-based conflicts, 25 battle-related deaths overall are necessary for inclusion [15].

Gross National Income Per Capita

The gross national income is the total amount of money earned by a nation's people and businesses.

It's a combination of the GDP and the income countries get from overseas sources divided by its population so you can get a better idea of how much the average person is earning [8].

4 Results

4.1 How Women's well-being vary across countries

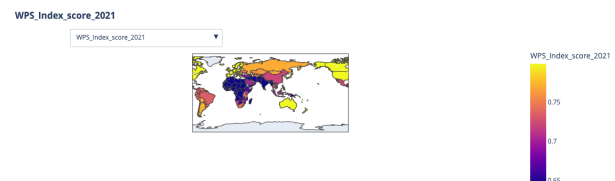


Figure 1: Interactive visualization mapping WPS index onto a map. The map allows for users to control for specific WPS indicators and see how countries are performing both overall, and on specific factors.

There are general trends that we've noticed in the visualization, as well as micro-trends. The biggest takeaway: The wealthier a country, the better a country tends to do on the WPS index.

You can see how countries score differently in different indicators. Education is critical to women's opportunities and it's measured by the average number of years of education completed by women ages 25 and over. From the visualization we can see that the same countries that scored high on the overall WPS index score also score high in education. The country with the highest years of education is Germany with 13.9 years of education completed, and the lowest is Burkina Faso with only 1.1 years of education. Education years can indicate access to different kinds of jobs one might have. In a country with very low education years for women, they are likely stuck working low-paying, unskilled labor. However, the trend is a bit different when you look at employment. Employment reflects women's economic opportunities, which are central to realizing women's capabilities. Interestingly, the relationship almost seems inverted, and the country with the highest female labor force participation is Burundi at 91.8%, but has the lowest GDP per capita in the world in 2021.

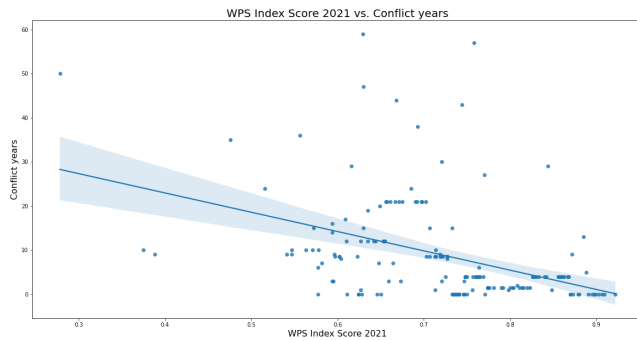


Figure 2: Scatterplot representing the relationship between conflict years and WPS index score. The line represents the average between the relationships.

With decreasing conflict years countries scored higher. For example Afghanistan and Iraq have conflict years of 50 and 20 years respectively and they are at the bottom of WPS. Essentially more than 87.5% of countries in the bottom quartile of WPS had history of recurring conflict (Figure 2).

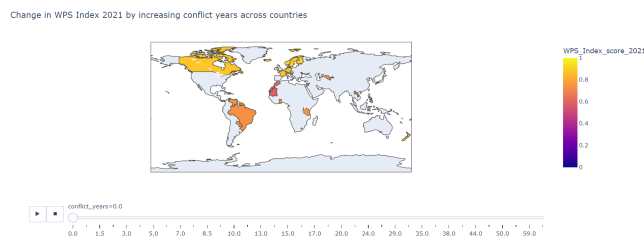


Figure 3: World heat map that highlights countries with similar number of recurring conflict years with corresponding WPS index scores.

Here we noticed there was a discrepancy between the number of conflict years and WPS index scores. Even at 0 conflict years first-world countries like Canada and those in western Europe score higher than countries like Brazil and Mauritania. France has the lowest WPS index score of 0.87 among the first-world countries. Brazil scores 0.734 while Mauritania scores 0.577 (figure 2). Additionally South Sudan, Chad, Libya, Spain and Yemen have the same conflict years. However, Spain has the highest WPS Index of 0.87, South Sudan, Chad and Libya have WPS between 0.54-0.59 whereas Yemen is at 0.38. For us this indicated another unaddressed variable that was impacting the well-being of women in these nations, because most of the higher scoring countries were “first-world” countries we decided to take a closer look at GNI per capita.

4.3 Relationship between well-being and GNI

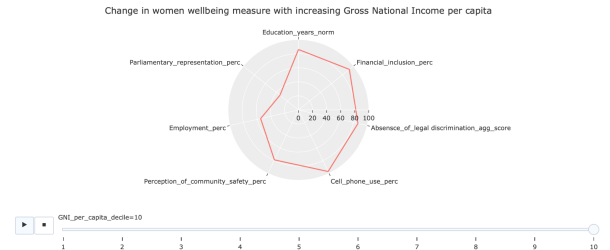


Figure 4: Radar plot mapping specific WPS indicators interactively responding to changing GNI value

In order to tell a clearer narrative, only indicators where higher values are desirable are used. For values like education years the values were scaled between the minimum and maximum values—1.1 and 13.9 years—and calculated on a percentage of how close the respective country is to either.

For example, as GDP per capita increases, the radar plot shrinks. At the 10th decile—lowest GNI—the number of women reporting an individual or joint account at a bank or other financial institution, or who reported using a mobile money service in the past year was 18.99%. At the 1st decile—highest GNI—92.59% of women report they are included financially.

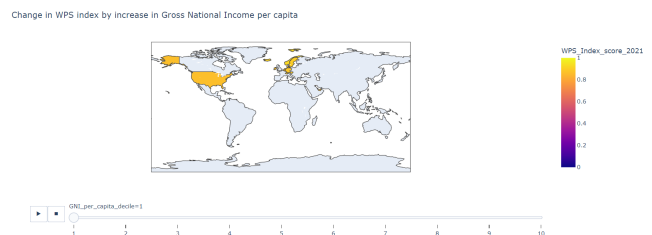


Figure 5: World heat map highlighting countries with similar GNI per capita values with corresponding WPS index scores.

Reiterating on the previous graph, there are almost no countries with a low GNI that has a high WPS index score.

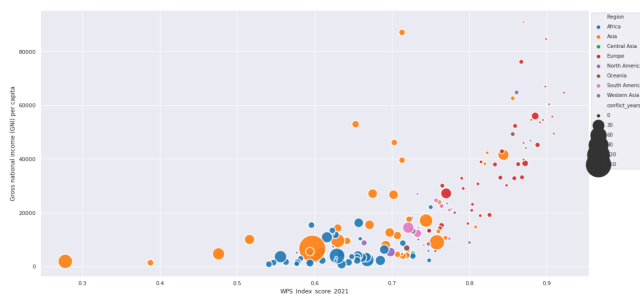


Figure 6: Scatterplot illustrating three variables: x-axis is WPS index score, y-axis is GNI per capita, and the size of each bubble indicates number of recurring conflict years.

The issue of women's well-being is entangled and difficult to address from only one perspective. Through this graph we are able to see investment in women's well-being creates an almost exponential return in GNI per capita. Countries with bubbles representing 30 years of recurring conflict and over also rarely find themselves above \$40,000 GNI per capita. Lastly, when analyzing geographically Europe is the best continent when it comes to women's well-being with few conflict years and high GNI. African countries are almost entirely clumped together in one section of the map while Asia is the most widespread.

By analyzing specific factors from the WPS index we noticed some continents seem to be faring better than the rest of the world when it comes to women's well-being. Throughout the whole exploration process we realized beyond just "first-world" countries, we noticed there were also trends about how many years have countries been in conflict. Countries with higher recurring conflict have a more insidious impact on women through the breakdown of social norms(Cite). Countries with higher Gross National Income are better for women's well-being compared to countries with similar conflict years but lower Gross National Income. Conflicts often stem out of social and economic unrest, and the results of the conflict also have a huge social and economic effect on the country [14]. Recurring conflict in countries with lower GNI have a more negative impact on WPS compared to countries with higher GNI.

5 DISCUSSION

At present, Europe and North America are the best regions for women's well-being. In order to create a better world for women, conflicts across countries need to be taken more seriously, and for an equitable world, a country's gross national income per capita should be on par with the world's average per capita

income, and women should be given the financial independence to take part in that wealth.

In Figure 4, Studies have found if a woman has no control over their resources, then they have very little control over their life and choices [1][2]. In Figure 5 what is observed is as a country's GNI increases, the WPS score also decreases. There may be a few reasons for this: As explored in Figures 2 and 3 recurring conflicts can negatively impact women's well-being in a region. Wars can be a cause of poverty, underdevelopment, and ill health in poor countries, however wars can also begin because of political, economic, and social inequalities [14]. Studies also point to greater investment in women's health in higher income countries. Women often play the role of the "health manager" in their families and communities. By taking on a larger share of the care work, public health overall will gain a boost from investment in women's health[11][13]. It seems, then, greater investment in helping women fiscally and with their health will result in an overall increase in a country's GNI.

6 LIMITATIONS AND FUTURE WORK

6.1 Circular Visualizations

Radar plots can make data points appear more or less significant depending on how they are arranged in the circle. In addition, differences in the outer ring can appear more negligible than the ones closer to the center. The choice of the radar plot was made because of the visceral quality of watching the circle represent women's well-being shrink as the GNI shrinks. However, we can try using a parallel coordinate chart instead of a radar plot to create a less skewed visualization.

6.2 Self-Reporting in WPS Index

The WPS Index is not able to tell the full story. The index only captures the percentage of women who reported experiencing physical or sexual violence committed by their intimate partner in the last 12 months [6]. Although it is outside of our control, one must wonder how many instances of intimate partner violence are unreported because of social or cultural pressures. Many WPS index factors are based on self-reports, such as cell-phone use and financial inclusion [6]. In the future, then, data can be taken directly from service providers or linked mail accounts to see who is using which device. Ultimately, there should be more concrete data that is used.

6.3 Future Work

There seems to be a connection between investment in women's health and a boost to the economy, and it would be interesting to continue to explore this thread through more visualizations to see if there is an upper limit to return on investment in healthcare spendings. Most conflict studies analyze how their bodies are treated in times of conflict, and not as much about how they are fiscally impacted. Both gaps should be addressed as the world is trying to improve women's well-being.

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APPENDIX

WPS Index Definitions

Education allows women the freedom from violence, and greater financial opportunities, and can be critical to one's health. The index captures the average number of years of education of women ages 25 and older. Data is sourced from the UNESCO Institute for Statistics.

The global average is 8.1 years of education. The country with the highest score is Germany with an average 13.9 years of education, and the lowest Burkina Faso with 1.1 years.

Employment is representative of a woman's economic opportunities, and can be indicative of society's views on a working woman. The index captures the percentage of women ages 25 and older who are employed. Data is sourced from the ILOSTAT database.

Burundi has the largest percentage of women employed at 91.8%, while Yemen has the least at 5.2%. The global average is 46.5%.

Cellphone Use In the modern world cell phone use grants people access to information and resources online with just a single tap. Increasingly, cell phone use allows people to participate in the economy, society, and politics. The index captures the percentage of women ages 15 years and older who report having a mobile phone that they use to make and receive personal calls. Data is sourced from Gallup World Poll 2018.

Libya has 100% of women reporting they have a personal cell phone, and the lowest scoring South Sudan with only 27% of women having access to a personal cell phone. It should be noted the global average is quite high for this indicator, on average 84.7% of women report having access to a personal cell phone.

Financial Inclusion allows for people to be more resilient and choose what they invest in. The Index measures the percentage of women 15 years and older reporting to have an individual or joint account at a bank or other financial institution, or used a mobile money service in the past year. Data is sourced from the World Bank Global Findex Database.

Denmark has 100% of women reporting they have access to a bank account, but only 1.7% of women in Yemen report that they do. The global average for this indicator is 63.6%.

Parliament measures women's participation in politics. The index measures the percentage of seats held by women in lower and upper houses of national parliament. Data is sourced from the Inter-Parliamentary Union.

Rwanda has 55.7% of parliamentary seats held by women, while Papua New Guinea has 0% held by women. The global average is 25.5% of parliamentary seats being held by women.

Discriminatory norms captures society's views on women working through the percentage of men ages 15 years and older who disagreed with the proposition: "It's perfectly acceptable for any woman in your family to have a paid job outside the home if she wants one." Data is sourced from Gallup and International Labour Organization.

Canada reports having 0% of discriminatory norms, while 73% of men in Pakistan say it's not okay for women to have a paid job outside the home. The global average is 20.3%.

Son bias measures whether the ratio of boys born to girls exceeds the natural demographic rate of 1.05. Data is sourced from the United Nations Department of Social and Economic Affairs.

Namibia has the best score at 1.01, and the worst score is from Azerbaijan at 1.12. The global average is 1.07.

Legal discrimination makes it difficult for women to gain access to the same rights as men, and is measured by an aggregate score for laws and regulations that limit women's ability to participate in society and the economy or that differentiate between men and women. Data is sourced from the World Bank, Women Business, and the Law.

Latvia has the best score with 100% no discriminatory laws, while Palestine is the worst with only 26.3% of their laws are not discriminatory toward women. The global average is 74.5%.

Organized violence captures the extent of societal insecurity due to armed conflict; this index tracks the total number of battle deaths from state-based, non-state, and one-sided conflicts per 100,000. Data is sourced from the Uppsala Conflict Data.

Multiple countries have a score of 0.0, indicating there is no organized violence. The country with the most organized violence is Syria at 75.1. The global average is 1.1.

Perception of Community Safety affects a woman's confidence and ability to access opportunities outside of their homes. The index captures the percentage of women ages 15 years and older who report "feeling safe walking alone at night in the city or area where you live." The data is sourced from the Gallup World Poll 2019.

The country with the best score is the United Arab Emirates with 98.5% of women reporting they feel safe walking outside their homes, while in Afghanistan only 9.8% of women report feeling safe. The global average is 61.9%.

Intimate Partner Violence Even just in the past year, almost one in eight women globally has experienced violence at home. The Index captures the percentage of women who experienced physical or sexual violence committed by their intimate partner in the last

calendar year. Data is sourced from the UN Women Global Database on Violence against Women.

The country with the best score is Singapore at 2.0% of women report experiencing violence at home. The country with the worst score is Iraq where 45.3% of women report experiencing violence at home. The global average is 11.7%.